CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2003-0061

NPDES NO. CA0082848

WASTE DISCHARGE REQUIREMENTS
FOR

SAN JOAQUIN COUNTY SERVICE AREA 31
FLAG CITY WASTEWATER TREATMENT PLANT
SAN JOAQUIN COUNTY

The California Regional Water Quality Control Board, Central Valley Region, (hereafter Regional Board) finds that:

*BACKGROUND*

1. San Joaquin County (hereafter Discharger) submitted a Report of Waste Discharge, dated 2 January 2002, and applied for a permit reauthorization to discharge waste under the National Pollutant Discharge Elimination System (NPDES) from the Flag City Wastewater Treatment Plant (FCWWTP). Supplemental information to complete filing of the application was submitted on 29 July 2002.

2. The Discharger owns and operates a wastewater collection, treatment, and disposal system, and provides sewerage service to San Joaquin County Service Area 31. The treatment plant is in Section 13, T3N, R5E, MDB&M, as shown on Attachment A, a part of this Order. Treated municipal wastewater from the commercial development is proposed to be discharged to Highline Canal, a water of the United States within the legal boundaries of the Sacramento-San Joaquin Delta (hereafter Delta) at the point, latitude 36°, 6', 25" and longitude 121°, 24', 36".

3. The Regional Board originally issued a NPDES permit for the FCWWTP on 27 March 1992 (Order No. 92-060), which allowed a surface water discharge of treated effluent from the Flag City commercial development to Highline Canal. Since plant startup in late 1995, the effluent was contained in an evaporation/percolation pond, due to low wastewater flows from the new commercial development. The pond, which was designed as an emergency pond, had adequate disposal capacity, eliminating the need for a surface water discharge. The Regional Board rescinded the NPDES permit and adopted Waste Discharge Requirements Order No. 98-217 on 23 October 1998 to reflect the land disposal. Due to commercial developments constructed at the end of 2001, the influent flow to the FCWWTP nearly doubled. The increased flow exceeds the capacity of the disposal pond. Therefore, the Discharger has applied to the Regional Board to reauthorize a surface water discharge from the FCWWTP.

4. The treatment system consists of a package type treatment plant, including, activated sludge extended aeration, secondary clarification, filtration, sodium hypochlorite disinfection, and dechlorination with sodium bisulfite. Excess secondary solids are stabilized by aerobic digestion, dewatered, and disposed off-site at a facility permitted to accept sludge waste. The

facility also contains an emergency storage pond.

5. The Report of Waste Discharge and monitoring data submitted by the Discharger describes the proposed wastewater discharge to Highline Canal (Outfall 001) as follows:

| | | |
|---|---|---|
| Average Annual Flow: | 0.040 | million gallons per day (mgd) |
| Daily Peak Wet Weather Flow: | 0.106 | mgd |
| Design Average Dry Weather Flow: | 0.16 | mgd |

| Constituent | Concentration | |
|---|---|---|
| BOD[2] | 2.9 mg/l (average) | 0.97 lb/Day[1] |
| Total Suspended Solids | 4.1 mg/l (average) | 1.37 lb/Day[1] |
| Ammonia (as Nitrogen) | 1.2 mg/l (average) | 4.9 mg/l (max) |
| Nitrate (as Nitrogen) | 16.5 mg/l (average) | 91 mg/l (max) |
| Nitrite (as Nitrogen) | 0.03 mg/l (average) | 0.07 mg/l (max) |
| Total Dissolved Solids | 773 mg/l (annual average) | |
| Electrical Conductivity | 1186 µhmos/cm (annual average) | |
| Chloride | 183 mg/l (annual average) | |
| Aluminum | 20 µg/l (average) | 23 µg/l (max) |
| Antimony | 0.39 µg/l (average) | 0.48 µg/l (max) |
| Arsenic | 5.8 µg/l (average) | 6.8 µg/l (max) |
| Barium | 123 µg/l (average) | 130 µg/l (max) |
| Copper | 20 µg/l (average) | 31 µg/l (max) |
| Cyanide | 7 µg/l (average) | 13 µg/l (max) |
| Iron | 67 µg/l (average) | 150 µg/l (max) |
| Lead | 0.42 µg/l (average) | 0.48 µg/l (max) |
| Manganese | 25 µg/l (average) | 72 µg/l (max) |
| Mercury | 0.0020 µg/l (average) | 0.0034 µg/l (max) |
| Nickel | 4.5 µg/l (average) | 5.5 µg/l (max) |
| Zinc | 62 µg/l (average) | 85 µg/l (max) |
| Chloroform | 54 µg/l (average) | 95 µg/l (max) |
| Dibromochloromethane | 6.5 µg/l (average) | 11 µg/l (max) |
| Bromodichloromethane | 26 µg/l (average) | 47 µg/l (max) |
| Total Trihalomethanes[3] | 87 µg/l (average) | 153 µg/l (max) |

(1) Calculation based on an average daily flow of 0.04 mgd.
(2) 5-day, 20°C biochemical oxygen demand.
(3) Total trihalomethanes is the sum of bromoform, bromodichloromethane, chloroform, and dibromochloromethane.

6. The Regional Board adopted a *Water Quality Control Plan*, *Fourth Edition, for the Sacramento and San Joaquin River Basins* (hereafter Basin Plan). The Basin Plan designates beneficial uses,

establishes water quality objectives, and contains implementation programs and policies to achieve water quality objectives for all waters of the Basin. These requirements implement the Basin Plan.

*BENEFICIAL USES*

7. The Discharger proposes to discharge to Highline Canal, which is located within the Delta boundaries. The beneficial uses of the Delta downstream of the discharge as identified in Table II-1 of the Basin Plan are municipal and domestic water supply, agricultural irrigation, agricultural stock watering, industrial process water supply, industrial service supply, water contact recreation, non-contact water recreation, warm and cold freshwater aquatic habitat, warm and cold fish migration habitat, warm spawning habitat, wildlife habitat, and navigation.

8. The Basin Plan includes numeric water quality objectives for various beneficial uses and water bodies. Numeric Basin Plan objectives that are applicable to this discharge and which have been included as Receiving Water Limitations are:

   a. *Dissolved Oxygen*—The Basin Plan includes a water quality objective that "[W]*ithin the legal boundaries of the Delta, the dissolved oxygen concentrations shall not be reduced below: 7.0 mg/l in the Sacramento River (below the I Street Bridge) and in all Delta waters west of the Antioch Bridge; 6.0 mg/l in the San Joaquin River (between Turner Cut and Stockton, 1 September through 30 November); and 5.0 mg/l in all other Delta waters except those bodies of water which are constructed for special purposes and from which fish have been excluded or where the fishery is not important as a beneficial use.*" Numeric Receiving Water Limitations for dissolved oxygen are included in this Order and are based on the Basin Plan objective.

   b. *pH*—The Basin Plan includes water quality objectives that the pH "…*not be depressed below 6.5 nor raised above 8.5. Changes in normal ambient pH levels shall not exceed 0.5 in fresh waters with designated COLD or WARM beneficial uses*." The Delta is designated as having both COLD and WARM beneficial uses. Numeric Receiving Water Limitations for pH are included in this Order and are based on the Basin Plan objectives for pH.

   c. *Temperature*— The State Water Resources Control Board (State Board) Water Quality Control Plan for Control of Temperatures in Coastal and Interstate Waters and Enclosed Bays and Estuaries of California (Thermal Plan) is applicable to this discharge. For purposes of the Thermal Plan, the Discharger is considered to be New Discharger of Elevated Temperature Waste. The Thermal Plan requires that such a discharge:

      *i) Shall not exceed the natural receiving water temperature by more than 20 °F;*

      *ii) Shall not create a zone, defined by water temperatures of more than 1 °F above natural receiving water temperature which exceeds 25% of the cross sectional area of a main river channel at any point; and,*

      *iii) Shall not cause a surface temperature rise greater than 4 °F above the natural temperature of the receiving waters at any time or place.*

The Thermal Plan defines *natural receiving water temperature* as "The temperature of the receiving water…unaffected by any elevated temperature waste discharge or irrigation return waters." Typically the Thermal Plan is applied using upstream receiving water conditions. However, the proposed outfall is at the northern-most end of Highline Canal. There is no upstream flow to determine the natural background conditions. Furthermore, the receiving waters in the vicinity of the discharge are largely agricultural and are affected by irrigation return waters. Therefore, it is not possible to apply the Thermal Plan to the discharge. In situations where there is no natural receiving water to determine the natural receiving water temperature, the State Board recommends the development of a site-specific temperature study to determine appropriate temperature controls to be placed on the discharge in order to protect the beneficial uses of the receiving water[1]. **Provision F.12** of this Order requires the Discharger to perform a temperature study. This Order will be reopened after completion of the temperature study to include final effluent limitations for temperature.

d. *Turbidity*—The Basin Plan includes a water quality objective that "[I]*ncreases in turbidity attributable to controllable water quality factors shall not exceed the following limits:*

- *Where natural turbidity is between 0 and 5 Nephelometric Turbidity Units (NTUs), increases shall not exceed 1 NTU.*
- *Where natural turbidity is between 5 and 50 NTUs, increases shall not exceed 20 percent.*
- *Where natural turbidity is between 50 and 100 NTUs, increases shall not exceed 10 NTUs.*
- *Where natural turbidity is greater than 100 NTUs, increases shall not exceed 10 percent."*

As discussed above, there is no natural background receiving water. Therefore, it is not possible to implement the turbidity Basin Plan objective, which is based on increases over natural turbidity. However, turbidity effluent limitations are included in this Order with adequate effluent controls to comply with the turbidity Basin Plan objective.

**Effluent Limitations B.4** of this Order requires that the effluent not exceed a daily average turbidity of 2 NTUs, not exceed 5 NTUs more than 5% of the time during any 24-hour period, and at no time exceed 10 NTUs. These effluent turbidity limitations are required to meet Title 22 disinfection requirements, which are discussed in more detail in **Findings 32 and 33**. The City of Lodi measures the turbidity of Highline Canal, approximately 1.5 miles downstream of the proposed discharge, as required by their NPDES permit. The average turbidity from October 2001 through September 2002 was 6.5 NTUs, which exceeds the new turbidity effluent limitations. Therefore, compliance with the new turbidity effluent limitations will provide adequate effluent controls to comply with the turbidity Basin Plan objective.

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1 State Water Resources Control Board Order WQO 2002 – 0015, adopted 3 October 2002, regarding WDR Order No. 5-01-044 for the City of Vacaville's Easterly Wastewater Treatment Plant

9. The beneficial uses of the underlying ground water, as identified in the Basin Plan, are municipal and domestic, industrial service, industrial process, and agricultural supply.

10. Basin Plan water quality objectives to protect the beneficial uses of surface water and groundwater include numeric objectives and narrative objectives, including objectives for chemical constituents, toxicity, and taste and odor. The toxicity objective requires that surface water and groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in humans, plants, or animals. The chemical constituent objective requires that surface water and groundwater shall not contain chemical constituents in concentrations that adversely affect any beneficial use or that exceed the maximum contaminant levels (MCLs) in Title 22, CCR. The tastes and odor objective states that surface water and groundwater shall not contain taste- or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses. The Basin Plan requires the application of the most stringent objective necessary to ensure that surface water and groundwater do not contain chemical constituents, toxic substances, radionuclides, or taste and odor producing substances in concentrations that adversely affect domestic drinking water supply, agricultural supply, or any other beneficial use.

*ANTIDEGRADATION*

11. SWRCB Resolution No. 68-16 (hereafter Resolution 68-16) and 40 Code of Federal Regulations (CFR) section 131.12 require the Regional Board, in regulating discharge of waste, to maintain high quality waters of the State until it is demonstrated that any change in quality will be consistent with maximum benefit to the people of the State, will not unreasonably affect beneficial uses, and will not result in water quality less than that described in the Regional Board's policies (e.g., quality that exceeds water quality objectives). Resolution 68-16 requires the discharge be regulated to meet best practicable treatment or control to assure that pollution or nuisance will not occur and the highest water quality consistent with the maximum benefit to the people of the State be maintained.

12. With regards to surface water, the receiving water may exceed applicable water quality objectives for certain constituents as described in this Order. However, this Order requires the discharger, in accordance with specified compliance schedules, to meet requirements that will result in the use of best practicable treatment or control of the discharge and will result in compliance with water quality objectives. This Order also establishes interim effluent limitations and compliance schedules for pollutants that cannot immediately be controlled to prevent any additional degradation of surface water by these pollutants. The total allowable discharge of 0.16 mgd has not been increased from the previous NPDES permit issued for the FCWWTP and, therefore, does not cause additional degradation beyond that allowed in the previous NPDES permit. The discharge is consistent with Resolution 68-16 and 40 CFR section 131.12 because this Order requires the discharger to meet requirements that will result in best practicable treatment or control to assure that pollution or nuisance will not occur. Some degradation is consistent with maximum benefit to the people of the state because the discharge allows for economic or social development in the area.

13. With regards to groundwater, domestic wastewater contains constituents such as total dissolved solids (TDS), specific conductivity, pathogens, nitrates, organics, metals and oxygen demanding substances (BOD). The Discharger's unlined emergency pond may result in an increase in the concentration of these constituents in groundwater. Some degradation of groundwater by the Discharger is consistent with Resolution 68-16 provided that:

    a. The degradation is limited in extent;

    b. The degradation after effective source control, treatment, and control is limited to waste constituents typically encountered in municipal wastewater as specified in the groundwater limitations in this Order;

    c. The Discharger minimizes the degradation by fully implementing, regularly maintaining, and optimally operating best practicable control technology (BPCT) measures; and

    d. The degradation does not result in water quality less than that prescribed in the Basin Plan, e.g., does not exceed water quality objectives.

*GROUNDWATER*

14. Monitoring of the groundwater must be conducted to determine if the discharge has caused an increase in constituent concentrations, when compared to background. The monitoring must, at a minimum, require a complete assessment of groundwater impacts including the vertical and lateral extent of degradation, an assessment of all wastewater-related constituents which may have migrated to groundwater, an analysis of whether additional or different methods of treatment or control of the discharge are necessary to provide best practicable treatment or control to comply with Resolution No. 68-16. Economic analysis is only one of many factors considered in determining best practicable treatment. If monitoring indicates that the discharge has incrementally increased constituent concentrations in groundwater above background, this permit may be reopened and modified. Until groundwater monitoring is sufficient, this Order contains Groundwater Limitations that allow groundwater quality to be degraded for certain constituents when compared to background groundwater quality, but not to exceed water quality objectives. If groundwater quality has been degraded by the discharge, the incremental change in pollutant concentration (when compared with background) may not be increased. If groundwater quality has been or may be degraded by the discharge, this Order may be reopened and specific numeric limitations established consistent with Resolution 68-16 and the Basin Plan.

15. The discharge authorized herein and the treatment and storage facilities associated with the discharge of treated municipal wastewater, except for discharges of residual sludge and solid waste, are exempt from the requirements of Title 27, California Code of Regulations (CCR), section 20005 et seq. (hereafter Title 27). The exemption, pursuant to Title 27 CCR section 20090(a), is based on the following:

    a. The waste consists primarily of domestic sewage and treated effluent;

    b. The waste discharge requirements are consistent with water quality objectives; and

c. The treatment and storage facilities described herein are associated with a municipal wastewater treatment plant.

16. This Order requires the Discharger to perform groundwater monitoring and includes a regular schedule of groundwater monitoring in the attached Monitoring and Reporting Program. The groundwater monitoring reports are necessary to evaluate impacts to waters of the state to assure protection of beneficial uses and compliance with Regional Board plans and policies, including Resolution 68-16. Evidence in the record includes effluent monitoring data that indicates the presence of constituents that may degrade groundwater and surface water.

Section 13267 of the California Water Code states, in part, "*(a) A regional board, in establishing…waste discharge requirements… may investigate the quality of any waters of the state within its region"* and *"(b) (1) In conducting an investigation…, the regional board may require that any person who… discharges… waste…that could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires.*" The attached Monitoring and Reporting Program is issued pursuant to California Water Code Section 13267. The monitoring and reporting program to monitor groundwater required by this Order and the attached Monitoring and Reporting Program are necessary to assure compliance with these waste discharge requirements. The Discharger operates the facility that discharges waste subject to this Order.

*EFFLUENT LIMITATIONS AND REASONABLE POTENTIAL*

17. Effluent limitations, and toxic and pretreatment effluent standards established pursuant to Sections 301 (Effluent Limitations), 302 (Water Quality Related Effluent Limitations), 304 (Information and Guidelines), and 307 (Toxic and Pretreatment Effluent Standards) of the Clean Water Act (CWA) and amendments thereto are applicable to the discharge.

18. The U.S. Environmental Protection Agency (USEPA) adopted the *National Toxics Rule* (NTR) on 5 February 1993 and the *California Toxics Rule* (CTR) on 18 May 2000. These Rules contain water quality standards applicable to this discharge. The State Water Resources Control Board adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (known as the State Implementation Plan or SIP), which contains guidance on implementation of the *National Toxics Rule* and the *California Toxics Rule.*

19. Federal regulations require effluent limitations for all pollutants that are or may be discharged at a level that will cause or have the reasonable potential to cause, or contribute to an in-stream excursion above a narrative or numerical water quality standard. Based on information submitted as part of the application, in studies, and as directed by monitoring and reporting programs the Regional Board finds that the discharge does have a reasonable potential to cause or contribute to an in-stream excursion above a water quality standard for electrical conductivity, ammonia, nitrate, barium, chlorine residual, total trihalomethanes, dibromochloromethane, bromodichloromethane, copper, cyanide, and manganese. Effluent limitations for these constituents are included in this Order. In addition, this Order contains provisions that:

a. Require the Discharger to conduct a study to provide information as to whether the levels of priority pollutants, including CTR and NTR constituents, constituents for which drinking water maximum contaminant levels (MCLs) are prescribed in the California Code of Regulations (CCR), or other pollutants in the discharge cause or contribute to an in-stream excursion above a water quality standard, including Basin Plan numeric or narrative objectives;

b. If the discharge has a reasonable potential to cause or contribute to an in-stream excursion above a water quality standard, requires the Discharger to submit information to calculate effluent limitations for those constituents; and

c. Allows the Regional Board to reopen this Order and include effluent limitations for those constituents.

On **10 September 2001**, the Executive Officer issued a letter, in conformance with State Water Code, Section 13267, requiring the Discharger to prepare a technical report assessing water quality. A copy of that letter, and accompanying attachments, are incorporated into this Order as **Attachment G**. **Provision F.11** of this Order is intended to be consistent with the requirements of **Attachment G** in requiring sampling for NTR, CTR, and additional constituents to determine the full water quality impacts of the discharge. The technical report requirements are intended to be more detailed, listing specific constituents, detection levels, and acceptable time frames and shall take precedence in resolving any conflicts.

20. Section 13263.6(a), California Water Code, requires that "the regional board shall prescribe effluent limitations as part of the waste discharge requirements of a POTW for all substances that the most recent toxic chemical release data reported to the state emergency response commission pursuant to Section 313 of the Emergency Planning and Community Right to Know Act of 1986 (42 U.S.C. Sec. 11023) (EPCRKA) indicate as discharged into the POTW, for which the state board or the regional board has established numeric water quality objectives, and has determined that the discharge is or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to, an excursion above any numeric water quality objective".

    The most recent toxic chemical release data report contains no data. Therefore, a reasonable potential analysis based on information from EPCRKA cannot be conducted. Based on EPCRKA, there is no reasonable potential to cause or contribute to an excursion above any numeric water quality objectives included within the Basin Plan or in any State Board plan, so no effluent limitations are included in this permit pursuant to CWC Section 13263.6(a).

    However, as detailed elsewhere in this permit, available effluent data indicate that there are constituents present in the effluent that have a reasonable potential to cause or contribute to water quality impacts.

21. As stated in the above Findings, the USEPA adopted the NTR and the CTR, which contain water quality standards applicable to this discharge and the State Water Resources Control Board adopted the SIP, which contains guidance on implementation of the NTR and CTR. The SIP, Section 2.2.1, requires that if a compliance schedule is granted for a CTR or NTR constituent,

the Regional Board shall establish interim requirements and dates for their achievement in the NPDES permit. The interim limitations must be based on current treatment plant performance or existing permit limitations, whichever is more stringent; include interim compliance dates separated by no more than one year, and; be included in the Provisions. The interim limitations in this Order are based on the current treatment plant performance. In developing the interim limitation, when there are less than ten sampling data points available, the *Technical Support Document for Water Quality Based Toxics Control* (EPA/505/2-90-001) (TSD) recommends a coefficient of variation of 0.6 be utilized as representative of wastewater effluent sampling. The TSD recognizes that a minimum of ten data points is necessary to conduct a valid statistical analysis. Therefore, when there are less than ten sampling results for a constituent, the interim limitation is based on the corresponding multiplier from Table 3-1 of the TSD multiplied by the maximum observed concentration. Interim limitations are established when compliance with NTR- and CTR-based Effluent Limitations cannot be achieved by the existing discharge. Discharge of constituents in concentrations in excess of the final Effluent Limitations, but in compliance with the interim Effluent Limitations, can significantly degrade water quality and adversely affect the beneficial uses of the receiving stream on a long-term basis. The interim limitations, however, establish an enforceable ceiling concentration until compliance with the effluent limitation can be achieved.

*INORGANIC CONSTITUENTS*

22. ***Barium:*** Based on information included in analytical laboratory results submitted by the Discharger, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan water quality objective for barium. The Basin Plan contains a site-specific numeric barium objective of 100 µg/l for the Delta. The maximum observed effluent barium concentration was 130 µg/l. Effluent Limitations for barium are included in this Order based on the Delta site-specific Basin Plan objective.

23. ***Copper:*** Based on information included in analytical laboratory results submitted by the Discharger, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for copper. The CTR includes hardness-dependent criteria for the protection of freshwater aquatic life for copper. The copper CTR criteria are 21 µg/l, as a 4-day average, and 34 µg/l, as a 1-hour average, based on a hardness of 270 mg/l as $CaCO_3$. Freshwater aquatic habitat is a beneficial use of the receiving water. In addition, the Basin Plan contains a site-specific water quality objective for the Delta of 10 µg/l for dissolved copper, which is not dependent on hardness. The maximum observed effluent copper concentration was 31 µg/l, which exceeds the CTR criteria and the site-specific Basin Plan objective. Effluent limitations for copper are included in this Order based on the CTR criteria for the protection of freshwater aquatic life and the Delta site-specific Basin Plan objective.

24. ***Cyanide:*** Based on information included in analytical laboratory results submitted by the Discharger, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for cyanide. The CTR includes maximum 1-hour average and 4-day average cyanide criteria of 22 µg/l and 5.2 µg/l, respectively, for the protection of freshwater aquatic life. Freshwater aquatic habitat is a beneficial use of the receiving water. Furthermore, the Basin Plan contains a site-specific numeric objective for the Delta of 10 µg/l.

The maximum observed effluent cyanide concentration was 13 µg/l. Effluent Limitations for cyanide are included in this Order based on the CTR criteria for the protection of freshwater aquatic life. The calculated effluent limitations are also protective of the Delta site-specific Basin Plan objective.

Section 2.1 of the SIP provides that: "*Based on an existing discharger's request and demonstration that it is infeasible for the discharger to achieve immediate compliance with a CTR criterion, or with an effluent limitation based on a CTR criterion, the RWQCB may establish a compliance schedule in an NPDES permit*." Section 2.1, further states that compliance schedules may be included in NPDES permits provided that the following justification has been submitted: …*"(a) documentation that diligent efforts have been made to quantify pollutant levels in the discharge and the sources of the pollutant in the waste stream; (b) documentation of source control measures and/or pollution minimization measures efforts currently underway or completed; (c) a proposal for additional or future source control measures, pollutant minimization actions, or waste treatment (i.e., facility upgrades); and (d) a demonstration that the proposed schedule is as short as practicable."* **Provision F.7** of this Order requires the Discharger to provide this information. The new water quality-based effluent limitations for cyanide become effective on **1 July 2003** if the Discharger does not submit a compliance schedule justification to the Regional Board. Otherwise, final water quality-based effluent limitations for cyanide become effective **1 January 2008.**

25. ***Manganese:*** The Basin Plan contains a site-specific numeric objective for the Delta of 50 µg/l for manganese. Furthermore, the Basin Plan states that waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses. At minimum, "…water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs)…" The Secondary MCL is 50 µg/l for manganese.

    Based on information included in analytical laboratory reports submitted by the Discharger, manganese in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above water quality standards, specifically the Delta site-specific numeric objective and the narrative chemical constituent objective in the Basin Plan. The maximum observed effluent manganese concentration was 72 µg/l. An effluent limitation for manganese is included in this Order based on protection of the Basin Plan objectives. The federal regulations at 40 CFR Section 122.44(d)(1)(vi)(A) allows the state to establish effluent limitations using explicit state policy interpreting its narrative criterion.

26. ***Mercury:*** Mercury was detected in the effluent in three samples taken in 2002 using "clean technique" (USEPA Method 1631). The maximum effluent concentration was 0.0034 µg/l. The current USEPA's ambient water quality criterion (expressed as dissolved concentrations) for continuous concentration of mercury is 0.77 µg/l (4-day average, chronic criteria), and the CTR (expressed as total recoverable) concentration for the human health protection for consumption of water and aquatic organisms is 0.050 µg/l, however, the criteria do not address bioaccumulation in the river. Mercury is listed under the California 303(d) list based on bioaccumulation of mercury in fish tissue. Any loading of mercury from the discharge may have the reasonable potential to cause or contribute to an excursion above the narrative toxicity

objective by causing bioaccumulation in fish tissue. Health advisories by the DHS remain in effect for human consumption of fish in the Delta due to excessive concentrations of mercury in fish flesh.

The Regional Board plans to adopt Total Maximum Daily Loads (TMDLs) for mercury in the Delta by December 2005. When the TMDL is complete, the Regional Board will adopt appropriate water quality-based concentration and mass loading effluent limits for the discharge. For situations like this, the SIP recommends that mass loading of the bioaccumulative pollutant should be limited in the interim to *representative, current levels* pending development of a TMDL. Until the TMDL is completed and water quality-based effluent limits are prescribed, an interim, performance-based, mass loading limit will be prescribed.

The Discharger's sampling of mercury is sufficient to determine reasonable potential, but is not a sufficient database to determine an annual interim mass effluent limitation. Therefore, this Order does not contain an interim performance-based effluent limit for mercury until additional data are obtained. **Provision F.10** of this Order requires the Discharger to conduct one year of monthly monitoring for mercury in the effluent, using "clean technique" (USEPA Method 1631), with monthly mass loadings being calculated for each calendar month, and allows the Regional Board to reopen the Order to establish an interim effluent mass limit for mercury. The final effluent limit for mercury will be determined from an approved TMDL.

*ORGANIC CONSTITUENTS*

27. ***Bromodichloromethane (BDCM) and dibromochloromethane (DBCM):*** Based on information included in analytical laboratory results submitted by the Discharger, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for BDCM and DBCM. The CTR includes criteria for the protection of human health based on a one-in-a-million cancer risk for these organic constituents. Municipal and domestic supply is a beneficial use of the receiving water. The criteria for waters from which both water and organisms are consumed are 0.56 µg/l and 0.41 µg/ for BDCM and DBCM, respectively. The maximum observed effluent concentrations for BDCM and DBCM were 16 µg/l and 5.3 µg/l, respectively. Effluent limitations for BDCM and DBCM are included in this Order based on the CTR criteria for the protection of human health.

Section 2.1 of the SIP provides that: "*Based on an existing discharger's request and demonstration that it is infeasible for the discharger to achieve immediate compliance with a CTR criterion, or with an effluent limitation based on a CTR criterion, the RWQCB may establish a compliance schedule in an NPDES permit*." Section 2.1, further states that compliance schedules may be included in NPDES permits provided that the following justification has been submitted: …*"(a) documentation that diligent efforts have been made to quantify pollutant levels in the discharge and the sources of the pollutant in the waste stream; (b) documentation of source control measures and/or pollution minimization measures efforts currently underway or completed; (c) a proposal for additional or future source control measures, pollutant minimization actions, or waste treatment (i.e., facility upgrades); and (d) a demonstration that the proposed schedule is as short as practicable."* **Provision F.7** of this Order requires the Discharger to provide this information. The new water quality-based effluent

limitations for BDCM and DBCM become effective on **1 July 2003** if the Discharger does not submit a compliance schedule justification to the Regional Board. Otherwise, final water quality-based effluent limitations become effective **1 January 2008.**

28. ***Total Trihalomethanes:*** This Order establishes an effluent limitation at the maximum contaminate level (MCL) for total trihalomethanes (THMs), the sum of bromoform, bromodichloromethane, chloroform and dibromochloromethane. The Basin Plan states that waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses. At a minimum, "…water designated for use as domestic or municipal supply shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels..." The new USEPA primary MCL is 80 µg/l. Based on information included in analytical laboratory results submitted by the Discharger, the discharge was found to have an average total THMs concentration of 87 µg/l, with a maximum concentration of 153 µg/l. The discharge has a reasonable potential to cause or contribute to an in-stream excursion above the water quality objective for municipal use by causing exceedance of the primary MCL for total THMs. Therefore, an effluent limitation for total THMs is included in this Order and is based on the Basin Plan narrative chemical constituents objective. The federal regulations at 40 CFR Section 122.44(d)(1)(vi)(A), allows the state to establish the effluent limitation using an explicit state policy interpreting its narrative criterion.

*OTHER CONSTITUENTS*

29. ***Ammonia and Nitrates:*** Untreated domestic wastewater contains ammonia. Nitrification is a biological process that converts ammonia to nitrite and nitrite to nitrate. Denitrification is a process that converts nitrate to nitrogen gas, which is then released to the atmosphere. Wastewater treatment plants commonly use nitrification to remove ammonia from the waste stream. Inadequate or incomplete nitrification may result in the discharge of ammonia to the receiving stream. Ammonia is known to cause toxicity to aquatic organisms in surface waters. The Basin Plan prohibits the discharge of toxic materials in toxic concentrations.

Nitrate and nitrite are known to cause adverse health effects in humans. The Basin Plan prohibits the discharge of chemical constituents in concentrations that adversely affect beneficial uses. "At a minimum, water designated for use as domestic or municipal supply shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels…". Domestic water supply is a beneficial use of the receiving water.

USEPA has developed Drinking Water Standards for protection of human health for nitrate and Ambient Water Quality Criteria for ammonia. The discharge from the FCWWTP has a reasonable potential to cause or contribute to an in-stream excursion above water quality standards for ammonia and nitrate. Effluent limitations for ammonia and nitrate are included in this Order to assure the treatment process adequately nitrifies and denitrifies the waste stream. The ammonia effluent limitations are based on the USEPA 1999 Update of Ambient Water Quality Criteria for Ammonia for the protection of freshwater aquatic life. The federal regulations at 40 CFR Section 122.44(d)(1)(vi)(B), allows the state to establish effluent limitation using USEPA's criteria. The nitrate limitations are based on the primary MCL. The federal regulations at 40 CFR Section 122.44(d)(1)(vi)(A), allows the state to establish effluent

limitations using an explicit state policy interpreting its narrative criterion.

30. ***Chlorine:*** The Regional Board finds that there is a reasonable potential for the discharge to cause or contribute to an excursion above a water quality standard for chlorine, specifically the "narrative toxicity objective" in the Basin Plan. The Discharger uses chlorine for disinfection of the effluent waste stream. Aquatic habitat is a beneficial use of the receiving water and chlorine can cause toxicity to aquatic organisms. USEPA recommends, in its Ambient Water Quality Criteria for the protection of fresh water aquatic life, maximum 1-hour average and 4-day average chlorine concentrations of 0.019 µg/l and 0.011 µg/l, respectively. The use of chlorine as a disinfectant presents a reasonable potential that it could be discharged in toxic concentrations. Effluent Limitations for chlorine have been included in this Order to protect the receiving stream aquatic life beneficial uses and have been established based on the ambient water quality criteria for chlorine. The federal regulations at 40 CFR Section 122.44(d)(1)(vi)(A), allows the state to establish the effluent limitation using an explicit state policy interpreting its narrative criterion and 40 CFR Section 122.44(d)(1)(vi)(B), allows the state to establish effluent limitations using USEPA's criteria.

31. ***Salinity:*** Total dissolved solids (TDS), chloride, and electrical conductivity (EC) are measures of the salt content of water. The presence of dissolved salts in water can be growth limiting to certain agricultural crops and affects the taste of water for human consumption. The Basin Plan states that waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses. Municipal and domestic supply and agricultural irrigation are beneficial uses of the receiving water. The water quality goals for salinity and the annual average effluent concentrations are as follows:

| Constituent | Agricultural WQ Goal | Secondary MCL | FCWWTP Effluent |
|---|---|---|---|
| EC | 700 µhmos/cm | 1000 µhmos/cm | 1186 µhmos/cm |
| TDS | 450 mg/l | 500 mg/l | 773 mg/l |
| Chloride | 106 mg/l | 250 mg/l | 183 mg/l |

Based on analytical reports submitted by the Discharger, the effluent exceeds the salinity water quality goals. Salinity effluent limitations are necessary to protect the beneficial uses of the receiving water. Treatment options to remove salt are few and costly. However, the Discharger may have the ability to reduce concentrations of dissolved salts in the effluent by developing an effective source control program to minimize dissolved salts discharged into the collection system and/or replace the water supply that averages an EC of 735 µhmos/cm. An effluent limit for EC is included in this Order, based on the EC Agricultural Water Quality Goal of 700 µhmos/cm. Since EC, Chloride, and TDS are all measurements of salinity, by meeting the effluent limitation for EC, the Discharger will simultaneously reduce the concentrations of chloride and TDS in the discharge. Therefore, effluent limitations for chloride and TDS have not been included in this Order.

*DISINFECTION/FILTRATION*

32. The beneficial uses of the receiving water include water contact recreation uses and agricultural irrigation. To protect these beneficial uses, the Regional Board finds that the wastewater must be disinfected and adequately treated to prevent disease. The principal infectious agents

(pathogens) that may be present in raw sewage may be classified into three broad groups: bacteria, parasites, and viruses. Tertiary treatment, consisting of chemical coagulation, sedimentation, and filtration, has been found to remove approximately 99.5% of viruses. Filtration is an effective means of reducing viruses and parasites from the waste stream. The wastewater must be treated to tertiary standards (filtered) to protect contact recreational and food crop irrigation uses.

The California Department of Health Services (DHS) has developed reclamation criteria, California Code of Regulations, Title 22, Division 4, Chapter 3 (Title 22), for the reuse of wastewater. Title 22 requires that for spray irrigation of food crops, parks, playgrounds, school yards, and other areas of similar public access, wastewater be adequately disinfected, oxidized, coagulated, clarified, and filtered, and that the effluent total coliform levels not exceed 2.2 MPN/100 ml as a 7-day median. Title 22 is not directly applicable to surface waters; however, the Regional Board finds that it is appropriate to apply DHS's reclamation criteria because the receiving water is used for irrigation of agricultural land and for contact recreation purposes. The stringent disinfection criteria of Title 22 are appropriate since the undiluted effluent may be used for the irrigation of food crops. Coliform organisms are intended as an indicator of the effectiveness of the entire treatment train and the effectiveness of removing other pathogens. The method of treatment is not prescribed by this Order; however, wastewater must be treated to a level equivalent to that recommended by DHS.

In addition to coliform testing, a turbidity effluent limitation has been included as a second indicator of the effectiveness of the treatment process and to assure compliance with the required level of treatment. The tertiary treatment process, or equivalent, is also capable of reliably meeting a turbidity limitation of 2 nephelometric turbidity units (NTU) as a daily average. Failure of the filtration system such that virus removal is impaired would normally result in increased particles in the effluent, which result in higher effluent turbidity. Turbidity has a major advantage for monitoring filter performance, allowing immediate detection of filter failure and rapid corrective action. Coliform testing, by comparison, is not conducted continuously and requires several hours, to days, to identify high coliform concentrations.

The application of tertiary treatment processes results in the ability to achieve lower levels for BOD and TSS than the secondary standards currently prescribed; the 30-day average BOD and TSS limitations have been established at 10 mg/l, which is technically-based on the capability of a tertiary system. This is consistent with Order No. 92-060; the previous NPDES permit for the facility. The Discharger is capable of meeting the limitations for BOD and TSS.

The FCWWTP has adequate filter and chlorination capacity for meeting the Title 22 tertiary treatment requirements. However, operational adjustments and additional monitoring improvements must be made to ensure the effluent limitations are met. Title 22 requires continuous monitoring of turbidity and chlorine residual. Adequate turbidity and chlorine residual monitors must be installed. Title 22 tertiary limitations have not been previously required for this discharge; therefore, a schedule for compliance with the requirements is included as **Provision F.6** in this Order. Alternatives to tertiary treatment, such as land disposal, would require modification of the permit.

33. This Order contains effluent limitations and a tertiary level of treatment, or equivalent, necessary to protect the beneficial uses of the receiving water. In accordance with California Water Code, Section 13241, the Board has considered the following:

As stated in the above Findings, the past, present and probable future beneficial uses of the receiving stream include municipal and domestic water supply, agricultural irrigation, agricultural stock watering, industrial process water supply, industrial service supply, water contact recreation, non-contact water recreation, warm and cold freshwater aquatic habitat, warm and cold fish migration habitat, warm spawning habitat, wildlife habitat, and navigation.

a. The environmental characteristics of the hydrographic unit including the quality of water available will be improved by the requirement to provide tertiary treatment for this wastewater discharge. Tertiary treatment will allow for the reuse of the undiluted wastewater for food crop irrigation and contact recreation activities which would otherwise be unsafe according to recommendations from DHS.

b. Fishable and swimmable water quality conditions can be reasonably achieved through the coordinated control of all factors that affect water quality in the area.

c. The economic impact of requiring an increased level of treatment has been considered. Only minor operational adjustments and monitoring improvements are needed for the FCWWTP to meet the Title 22 tertiary treatment requirements. The Discharger has estimated that the capital improvements for the increased level of treatment will cost approximately $57,800. The loss of beneficial uses within downstream waters, without the tertiary treatment requirement, include prohibiting the irrigation of food crops and prohibiting public access for contact recreational purposes, would have a detrimental economic impact. In addition to pathogen removal to protect irrigation and recreation, tertiary treatment may also aid in meeting discharge limitations for other pollutants, such as heavy metals, reducing the need for advanced treatment.

d. The need to develop housing in the area will be facilitated by improved water quality, which protects the contact recreation and irrigation uses of the receiving water. DHS recommends that, in order to protect the public health, undiluted wastewater effluent must be treated to a tertiary level, for contact recreational and food crop irrigation uses. Without tertiary treatment, the downstream waters could not be safely utilized for contact recreation or the irrigation of food crops.

e. It is the Regional Board's policy, (Basin Plan, page IV-15.00, Policy 2) to encourage the reuse of wastewater. The Regional Board requires Dischargers to evaluate how reuse or land disposal of wastewater can be optimized. The need to develop and use recycled water is facilitated by providing a tertiary level of wastewater treatment which will allow for a greater variety of uses in accordance with California Code of Regulations, Title 22.

*GENERAL*

34. The discharge is presently governed by Waste Discharge Requirements Order No.98-217, adopted by the Regional Board on 23 October 1998.

35. The action to adopt an NPDES permit is exempt from the provisions of Chapter 3 of the California Environmental Quality Act (CEQA) (Public Resources Code Section 21000, et seq.), requiring preparation of an environmental impact report or negative declaration in accordance with Section 13389 of the California Water Code.

36. The U.S. Environmental Protection Agency (USEPA) and the Regional Board have classified this discharge as a minor discharge.

37. The Regional Board has considered the information in the attached Information Sheet in developing the Findings of this Order. The attached Information Sheet is part of this Order.

38. The attached Monitoring and Reporting Program No. R5-2003-0061, and Attachment A through Attachment G are a part of this Order.

39. The Regional Board has notified the Discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for this discharge and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.

40. The Regional Board, in a public meeting, heard and considered all comments pertaining to the discharge.

41. This Order shall serve as an NPDES permit pursuant to Section 402 of the CWA, and amendments thereto, and shall take effect upon the date of hearing, provided EPA has no objections.

**IT IS HEREBY ORDERED** that Order No. 98-217 is rescinded and San Joaquin County, its agents, successors and assigns, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, and the provisions of the Clean Water Act and regulations and guidelines adopted thereunder, shall comply with the following:

## A. Discharge Prohibitions:

1. Discharge of wastewater at a location or in a manner different from that described in the Findings is prohibited.

2. The by-pass or overflow of wastes to surface waters is prohibited, except as allowed by Standard Provision A.13. [See attached “Standard Provisions and Reporting Requirements for Waste Discharge Requirements (NPDES)”].

3. Neither the discharge nor its treatment shall create a nuisance as defined in Section 13050 of the California Water Code.

## B. Effluent Limitations:

1. **Effective immediately**, effluent shall not exceed the following limitations:

| Constituents | Units | Monthly Average | Weekly Average | 7-day Median | 1-hour Average | Daily Maximum |
|---|---|---|---|---|---|---|
| BOD [1] | mg/l [2] | 10 | 20 | --- | --- | 30 |
| | lb/Day [3] | 13 | 27 | --- | --- | 40 |
| Total Suspended Solids | mg/l [2] | 10 | 20 | --- | --- | 30 |
| | lb/Day [3] | 13 | 27 | --- | --- | 40 |
| Settleable Solids | ml/l | --- | --- | --- | --- | 0.1 |
| Chlorine, Total Residual | mg/l | --- | 0.01 | --- | 0.02 | --- |
| | lb/Day [3] | --- | 0.013 | --- | --- | --- |
| Ammonia (as N) | mg/l | Table B[6] | --- | --- | Table B[6] | --- |
| Nitrate (as N) | mg/l | 10 | --- | --- | --- | --- |
| | lb/Day [3] | 13 | --- | --- | --- | --- |
| Copper [4] | µg/l | Table A[6] | --- | --- | --- | Table A[6] |
| Total Trihalomethanes[5] | µg/l | 80 | --- | --- | --- | --- |
| | lb/Day [3] | 0.11 | --- | --- | --- | --- |
| Barium | µg/l | 100 | --- | --- | --- | --- |
| | lb/Day [3] | 0.13 | --- | --- | --- | --- |
| Manganese | µg/l | 50 | --- | --- | --- | --- |
| | lb/Day [3] | 0.07 | --- | --- | --- | --- |
| Electrical Conductivity | µhmos/cm | 700[7] | --- | --- | --- | --- |

(1) 5-day, 20°C biochemical oxygen demand (BOD)

(2) To be ascertained by a 24-hour composite

(3) Based on a permitted flow of 0.16 mgd. For reporting purposes, these limitations shall be determined by multiplying the monthly average flow rate by the measured concentration.

(4) Total recoverable metals

(5) The monthly average for total trihalomethanes shall not exceed 80 µg/l. Total trihalomethanes is the sum of bromoform, bromodichloromethane, chloroform, and dibromochloromethane.

(6) Tables A and B are located in Attachment E of this Order.

(7) Annual average concentration.

2. **Effective immediately**, effluent shall not exceed the following interim limitations (Effluent limitations valid only through **30 April 2004**):

| Constituents | Units | Monthly Average | Weekly Average | 7-day Median | Daily Average | Daily Maximum |
|---|---|---|---|---|---|---|
| Total Coliform Organisms | MPN/100ml | --- | --- | 23 | --- | 240 |

3. **Effective immediately**, effluent shall not exceed the following performance-based interim limitations (Effluent limitations valid only through **31 December 2007**):

| Constituents | Units | Monthly Average | Weekly Average | 7-day Median | Daily Average | Daily Maximum |
|---|---|---|---|---|---|---|
| Cyanide[(1)] | µg/l | --- | --- | --- | --- | 73 |
| | lb/Day [(2)] | --- | --- | --- | --- | 0.10 |
| Dibromochloromethane[(1)] | µg/l | --- | --- | --- | --- | 62 |
| | lb/Day [(2)] | --- | --- | --- | --- | 0.08 |
| Bromodichloromethane[(1)] | µg/l | --- | --- | --- | --- | 263 |
| | lb/Day [(2)] | --- | --- | --- | --- | 0.35 |

(1) Interim performance-based effluent limitations calculated as described in Finding 21.
(2) Based on a permitted flow of 0.16 mgd.

4. **Effective 1 May 2004**, effluent shall not exceed the following limitations:

| Constituents | Units | Monthly Average | Weekly Average | 7-day Median | Daily Average | Daily Maximum |
|---|---|---|---|---|---|---|
| Total Coliform Organisms | MPN/100ml | --- | --- | 2.2 | --- | 23 |
| Turbidity[(1)] | NTU | --- | --- | --- | 2 | 10 |

(1) Turbidity may not exceed 5 NTU more than 5% of the time during any 24-hour period and at no time exceed 10 NTU.

5. **Effective 1 January 2008**[1], effluent shall not exceed the following limitations:

| Constituents | Units | Monthly Average | Weekly Average | 7-day Median | Daily Average | Daily Maximum |
|---|---|---|---|---|---|---|
| Cyanide | µg/l | 4.3 | --- | --- | --- | 8.5 |
| | lb/Day [(1)] | 0.0057 | --- | --- | --- | 0.011 |
| Dibromochloromethane | µg/l | 0.41 | --- | --- | --- | 0.82 |
| | lb/Day [(1)] | 0.00053 | --- | --- | --- | 0.0011 |
| Bromodichloromethane | µg/l | 0.56 | --- | --- | --- | 1.13 |
| | lb/Day [(1)] | 0.0008 | --- | --- | --- | 0.0015 |

(1) Based on a permitted flow of 0.16 mgd.

6. **Effective 1 April 2004**, wastewater shall be oxidized, coagulated and filtered in accordance with the Title 22 tertiary treatment requirements, or equivalent treatment provided, as discussed in Finding 32.

7. The arithmetic mean of 20°C BOD (5-day) and total suspended solids in effluent samples collected over a monthly period shall not exceed 15 percent of the arithmetic mean of the

1 Effluent Limitations B.5 become effective **1 July 2003**, unless compliance schedule justification is submitted by Discharger (see Provision F.7).

values for influent samples collected at approximately the same times during the same period (85 percent removal).

8. The discharge shall not have a pH less than 6.5 nor greater than 8.5.

9. The average dry weather discharge flow shall not exceed 0.16 million gallons per day.

10. The peak wet weather discharge flow shall not exceed 0.85 mgd.

11. Survival of aquatic organisms in 96-hour bioassays of undiluted waste shall be no less than:

    Minimum for any one bioassay - - - - - - - - - 70%
    Median for any three or more consecutive bioassays - - - - 90%

**C. Sludge Disposal:**

Sludge in this Order means the solid, semisolid, and liquid residues removed during primary, secondary, or advanced wastewater treatment processes. Solid waste refers to grit and screening material generated during preliminary treatment. Residual sludge means sludge that will not be subject to further treatment at the FCWWTP. Biosolids refers to sludge that has been treated and tested and shown to be capable of being beneficially and legally used pursuant to federal and state regulations as a soil amendment for agriculture, silviculture, horticulture, and land reclamation activities.

1. Sludge and solid waste shall be removed from screens, sumps, ponds, clarifiers, etc. as needed to ensure optimal plant operation.

2. Treatment and storage of sludge generated by the FCWWTP shall be confined to the FCWWTP property and conducted in a manner that precludes infiltration of waste constituents into soils in a mass or concentration that will violate Groundwater Limitations.

3. Any storage of residual sludge, solid waste, and biosolids on property of the FCWWTP shall be temporary and controlled and contained in a manner that minimizes leachate formation and precludes infiltration of waste constituents into soils in a mass or concentration that will violate Groundwater Limitations.

4. Residual sludge, biosolids, and solid waste shall be disposed of in a manner approved by the Executive Officer and consistent with Title 27. Removal for further treatment, disposal, or reuse at sites (i.e, landfill, composting sites, soil amendment sites) operated in accordance with valid waste discharge requirements issued by a regional water quality control board will satisfy this specification.

5. Use of biosolids as a soil amendment shall comply with valid waste discharge requirements issued by a regional water quality control board. In most cases, this will mean the General Biosolids Order (State Water Resources Control Board Water Quality Order No. 2000-10-DWQ, *General Waste Discharge Requirements for the Discharge of Biosolids to Land for*

*Use as a Soil Amendment in Agricultural, Silvicultural, Horticultural, and Land Reclamation Activities*). For a biosolids use project to be covered by the General Biosolids Order, the Discharger must file a complete Notice of Intent and receive a Notice of Applicability for each project.

6. Use and disposal of biosolids should comply with the self-implementing federal regulations of Title 40, Code of Federal Regulations (CFR), Part 503., which are subject to enforcement by the U.S. Environmental Protection Agency (EPA), not the Board. If during the life of this Order the State accepts primacy for implementation of 40 CFR 503, the Board may also initiate enforcement where appropriate.

**D. Receiving Water Limitations:**

Receiving Water Limitations are based upon water quality objectives contained in the Basin Plan. As such, they are a required part of this permit. However, a receiving water condition not in conformance with the limitation is not necessarily a violation of this Order. The Regional Board may require an investigation to determine cause and culpability prior to asserting a violation has occurred.

The discharge shall not cause the following in the receiving water:

1. Concentrations of dissolved oxygen to fall below 5.0 mg/l.

2. Oils, greases, waxes, or other materials to form a visible film or coating on the water surface or on the stream bottom.

3. Oils, greases, waxes, floating material (liquids, solids, foams, and scums) or suspended material to create a nuisance or adversely affect beneficial uses.

4. Esthetically undesirable discoloration.

5. Fungi, slimes, or other objectionable growths.

6. The ambient pH to fall below 6.5, exceed 8.5, or the 30-day average pH to change by more than 0.5 units.

7. Deposition of material that causes nuisance or adversely affects beneficial uses.

8. Radionuclides to be present in concentrations that exceed maximum contaminant levels specified in the California Code of Regulations, Title 22; that harm human, plant, animal or aquatic life; or that result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal, or aquatic life.

9. Aquatic communities and populations, including vertebrate, invertebrate, and plant species, to be degraded.

10. Toxic pollutants to be present in the water column, sediments, or biota in concentrations that adversely affect beneficial uses; that produce detrimental response in human, plant, animal, or aquatic life; or that bioaccumulate in aquatic resources at levels which are harmful to human health.

11. Violation of any applicable water quality standard for receiving waters adopted by the Regional Board or the State Water Resources Control Board pursuant to the CWA and regulations adopted thereunder.

12. Taste or odor-producing substances to impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin or to cause nuisance or adversely affect beneficial uses.

**E. Groundwater Limitations:**

1. Release of waste constituents from any storage, treatment, or disposal component associated with the FCWWTP shall not, in combination with other sources of the waste constituents, cause the following in groundwater:

   a. Beneficial uses to be adversely impacted or water quality objectives to be exceeded.

   b. Any constituent concentration, when compared with background, show a statistically significant increase beyond the current concentration.

   c. Any increase in total coliform organisms shall not exceed a most probable number of 2.2/100 ml over any seven-day period.

**F. Provisions:**

1. The treatment facilities shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return frequency.

2. The Discharger shall not allow pollutant-free wastewater to be discharged into the collection, treatment, and disposal system in amounts that significantly diminish the system's capability to comply with this Order. Pollutant-free wastewater means rainfall, groundwater, cooling waters, and condensates that are essentially free of pollutants.

3. This permit, and the Monitoring and Reporting Program which is a part of this permit, requires that certain parameters be monitored on a continuous basis. The Discharger does not currently have the appropriate equipment needed to provide continuous measurements of chlorine residual, sulfite residual, or turbidity. The Discharger is required to establish a system for taking these measurements. Furthermore, the Discharger currently measures effluent flows upstream of the chlorine contact basin, which is not downstream of the last connection through which wastes can be admitted into the outfall as stated in the Monitoring and Reporting Program. Therefore, the County must either install a flow meter downstream of the last connection through which wastes can be admitted into the outfall,

or provide justification that the current measurement location is representative of effluent flows and, if in the case of some type of facility failure that results in discharge of waters stored in the chlorine contact basin, the flow from the chlorine contact basin can be adequately estimated for reporting purposes.

The wastewater treatment plant is not staffed on a full time basis. Permit violations or system upsets can go undetected during this period. The Discharger is required to establish an electronic system for operator notification for the continuous recording device alarms generated by the chlorine/sulfite residual and turbidity continuous recording devices, when those devices are installed. Additionally, the Discharger is required to establish an electronic system for operator notification for the device alarms on the influent, filter feed, and effluent pumping facilities. The required facility upgrades shall be completed no later than **1 May 2004**.

4. ***Groundwater:*** To determine compliance with the Groundwater Limitations, the Discharger shall submit a Groundwater Monitoring Workplan by **1 November 2003.** The groundwater monitoring network shall include one or more background monitoring wells and a sufficient number of designated monitoring wells to evaluate performance of best practicable control technology (BPCT) measures and determine if the discharge has degraded groundwater. These include monitoring wells downgradient of the treatment, storage, and disposal unit that do or may release waste constituents to groundwater, such that any possible groundwater impacts attributed to these facilities can be determined. The monitoring wells shall be installed, developed, a Groundwater Well Installation Report submitted to the Regional Board, and groundwater monitoring shall commence by **1 September 2004.** The Groundwater Monitoring Workplan and Monitoring Well Installation Report shall be signed by a Registered Geologist, Certified Engineering Geologist, or Civil Engineer registered or certified by the State of California and shall contain the information listed in **Attachment F**, "*Items to be Included in a Monitoring Well Installation Workplan and a Monitoring Well Installation Report of Results."* All wells shall comply with appropriate standards as described in *California Well Standards Bulletin 74-90* (June 1991) and *Water Well Standards: State of California Bulletin 94-81* (December 1981), and any more stringent standards adopted by the Discharger pursuant to CWC section 13801.

After one year of monitoring, the Discharger shall characterize natural background quality of monitored constituents in a technical report, to be submitted by **1 November 2005**. If the monitoring shows that any constituent concentrations are increased above background water quality, the Discharger shall submit a technical report describing the evaluation's results and critiquing each evaluated component with respect to BPCT and minimizing the discharge's impact on groundwater quality. In no case shall the discharge be allowed to exceed a water quality objective. Where treatment system deficiencies are documented, the technical report shall provide recommendations for necessary modifications (e.g., new or revised salinity source control measures, FCWWTP component upgrade and retrofit) to achieve BPCT and identify the source of funding and proposed schedule for modifications for achieving full compliance prior to expiration of this Order. This Order may be

reopened and additional groundwater limitations added.

5. ***Chronic Toxicity Testing:*** The Discharger shall conduct the chronic toxicity testing specified in the Monitoring and Reporting Program. If the testing indicates that the discharge causes, has the reasonable potential to cause, or contributes to an in-stream excursion above the water quality objective for toxicity, the Discharger shall initiate a Toxicity Identification Evaluation (TIE) to identify the causes of toxicity. Upon completion of the TIE, the Discharger shall submit a workplan to conduct a Toxicity Reduction Evaluation (TRE) and, after Regional Board evaluation, conduct the TRE. This Order will be reopened and a chronic toxicity limitation included and/or a limitation for the specific toxicant identified in the TRE included. Additionally, if a chronic toxicity water quality objective is adopted by the State Water Resources Control Board, this Order may be reopened and a limitation based on that objective included.

6. ***Title 22 Disinfection Requirements:*** This Order requires that the wastewater be oxidized, coagulated, filtered, and adequately disinfected pursuant to the DHS reclamation criteria, California Code of Regulations, Title 22, Division 4, Chapter 3, (Title 22) or equivalent. The FCWWTP has adequate treatment capacity, however, operational adjustments and additional monitoring facilities are necessary to comply with the requirements. To allow for these modifications a time schedule to comply with these new limits is included. The Discharger shall comply with the following time schedule to assure compliance with **Effluent Limitations B.4 and B.6** of this Order:

| Task | Compliance Date | Report of Compliance Due |
|---|---|---|
| Submit Workplan | | **1 July 2003** |
| Submit Status Report | | **1 January 2004** |
| Full Compliance | **1 May 2004** | **1 June 2004** |

In the interim, to the maximum extent possible, the Discharger shall operate the tertiary facilities in accordance with the Title 22 tertiary treatment requirements. This includes operating the facility in compliance with the DHS recommended coagulation/flocculation requirements, maximum filter loadings, and minimum chlorine contact time.

The Discharger shall submit to the Regional Board on or before each compliance report due date, the specified document or, if appropriate, a written report detailing compliance or noncompliance with the specific schedule date and task. If noncompliance is being reported, the reasons for such noncompliance shall be stated, plus an estimated date when the Discharger will be in compliance. The Discharger shall notify the Regional Board by letter when it returns to compliance with the time schedule.

7. ***Compliance Schedule for cyanide, dibromochloromethane, and bromodichloromethane:*** The Discharger shall comply with the following time schedule to assure compliance with the new water quality based effluent limitations for cyanide, dibromochloromethane, and bromodichloromethane, contained in Effluent Limitations B.5 of this Order:

| Task | Compliance Date | Report of Compliance Due |
|---|---|---|
| Submit Workplan/Time Schedule | | **1 November 2003** |
| Submit Status Report | | **31 January and 15 July, each year** |
| Full Compliance | **1 January 2008** | **1 February 2008** |

The Discharger shall submit to the Regional Board on or before each compliance report due date, the specified document or, if appropriate, a written report detailing compliance or noncompliance with the specific schedule date and task. If noncompliance is being reported, the reasons for such noncompliance shall be stated, plus an estimate of the date when the Discharger will be in compliance. The Discharger shall notify the Regional Board by letter when it returns to compliance with the time schedule.

**Within sixty (60) days of the effective date of this Order**, the Discharger shall complete and submit a compliance schedule justification for cyanide, dibromochloromethane, and bromodichloromethane. The compliance schedule justification shall include all items specified by the SIP Section 2.1, Paragraph 3 (items (a) through (d)). The new water quality based effluent limitations for cyanide, dibromochloromethane, and bromodichloromethane become effective on **1 July 2003** if a compliance schedule justification meeting the requirements of Section 2.1 of the SIP is not completed and submitted by the Discharger. Otherwise the new final water quality-based effluent limitations for cyanide, dibromochloromethane, and bromodichloromethane required by this Order shall become effective on **1 January 2008**.

8. ***Pollution Prevention Plans*:** The Discharger shall prepare pollutant prevention and minimization programs in compliance with CWC 13263.3(d)(3) for salinity, barium, copper, cyanide, manganese, chloroform, dibromochloromethane, and bromodichloromethane. A work plan and time schedule for preparation of these pollution prevention plans shall be completed and submitted to the Executive Officer for approval by **1 December 2003**. The Pollution Prevention Plans shall be completed and submitted to the Regional Board by **1 December 2004**. A progress report shall be submitted **every six (6) months** after submittal of the work plan. Based on a review of the submitted information, this Order may be reopened for addition and/or modification of limitations and requirements for these constituents.

9. ***Treatment Feasibility Studies*:** The Discharger shall perform engineering treatment feasibility studies examining the feasibility, costs, and benefits of treatment to remove pollutants from the discharge for salinity, barium, copper, cyanide, manganese, chloroform, dibromochloromethane, and bromodichloromethane. A work plan and time schedule for completing the work components shall be submitted to the Executive Officer for approval by **1 December 2004**. All of the work specified within the work plan shall be completed and results submitted in report format to the Regional Board by **1 December 2006**. A progress report shall be submitted **every six (6) months** after approval of the work plan. If the Discharger submits a Project Report to the Regional Board by 1 October 2004 outlining plans and a time schedule to eliminate the surface water discharge by 1 January 2008, and the report is approved by the Executive Officer, then the obligations of this provision will

not be applicable.

10. ***Mercury Evaluation Report:*** Due to the listing of mercury on the California 303(d) list as a pollutant causing impairment of the Delta, the discharge must not cause or contribute to increased mercury levels in fish tissue to meet the requirements of the anti-degradation policy described in SWRCB Resolution No. 68-16 and the anti-degradation provision in 40 CFR 131.12 (a) (1). Therefore, the Discharger shall develop and submit a mercury evaluation workplan acceptable to the Executive Officer by **1 December 2004**, with mercury monitoring commencing by **30 January 2005**. The purpose of the mercury evaluation report is to determine to what extent the Discharger may be contributing additional mass loadings of mercury into the Delta. The workplan shall include the Discharger's proposal to provide monthly monitoring of mercury for one year using a "clean technique" (USEPA Method 1631). The final mercury evaluation report shall be submitted by **1 May 2006**. The final mercury evaluation report shall present the monthly mass loadings calculated for each calendar month. This Order may be reopened to establish an interim mass effluent limitation for mercury. If the Discharger submits a Project Report to the Regional Board by 1 October 2004 outlining plans and a time schedule to eliminate the surface water discharge by 1 January 2008, and the report is approved by the Executive Officer, then the obligations of this provision will not be applicable.

11. There are indications that the discharge may contain constituents that have a reasonable potential to cause or contribute to an exceedance of water quality objectives. The constituents are specifically listed in a technical report requirement issued by the Executive Officer on 10 September 2001 and include NTR, CTR, and additional constituents that could exceed Basin Plan numeric or narrative water quality objectives. The Discharger shall comply with the following time schedule in conducting a study of the potential effect(s) of these constituents in surface waters:

| Task | Compliance Date |
|---|---|
| Submit Study Report for Dioxins | **1 March 2004** |

This Order is intended to be consistent with the requirements of the 10 September 2001 technical report. The technical report requirements shall take precedence in resolving any conflicts. The Discharger shall submit to the Regional Board on or before each compliance due date, the specified document or a written report detailing compliance or noncompliance with the specific date and task. If noncompliance is reported, the Discharger shall state the reasons for noncompliance and include an estimate of the date when the Discharger will be in compliance. The Discharger shall notify the Regional Board by letter when it returns to compliance with the time schedule.

If, after review of the study results, it is determined that the discharge has reasonable potential to cause or contribute to an exceedance of a water quality objective, this Order may be reopened and effluent limitations added for the subject constituents.

12. ***Temperature Study:*** Since the proposed outfall is at the northern-most end of Highline Canal, there is no upstream flow to determine natural background conditions. Therefore, it is not possible to implement the current Basin Plan objective for temperature that addresses temperature increases of natural receiving water temperature. In situations where there is no natural receiving water to determine the natural receiving water temperature, the State Board recommends the development of a site-specific temperature study to determine the appropriate temperature controls to be placed on the discharge in order to protect the beneficial uses of the receiving water. Therefore, a Temperature Study workplan and time schedule for completing the work components shall be submitted to the Executive Officer for approval by **1 December 2004**. All of the work specified within the work plan shall be completed and results submitted in report format to the Regional Board by **1 December 2006**. A progress report shall be submitted **every six (6) months** after approval of the work plan. Based on a review of the submitted information, this Order may be reopened for addition of temperature effluent limitations. If the Discharger submits a Project Report to the Regional Board by 1 October 2004 outlining plans and a time schedule to eliminate the surface water discharge by 1 January 2008, and the report is approved by the Executive Officer, then the obligations of this provision will not be applicable.

13. The Discharger shall report to the Regional Board any toxic chemical release data it reports to the State Emergency Response Commission within 15 days of reporting the data to the Commission pursuant to section 313 of the "Emergency Planning and Community Right to Know Act of 1986".

14. The Discharger shall comply with all the items of the "Standard Provisions and Reporting Requirements for Waste Discharge Requirements (NPDES)", dated 1 March 1991, which are part of this Order. This attachment and its individual paragraphs are referred to as "Standard Provisions."

15. The Discharger shall comply with Monitoring and Reporting Program No. R5-2003-0061, which is part of this Order, and any revisions thereto as ordered by the Executive Officer.

16. The Discharger must utilize EPA test methods and detection limits to achieve detection levels below applicable water quality criteria. At a minimum the Discharger shall comply with the Monitoring Requirements for these constituents as outlined in Section 2.3 and 2.4 of the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California, adopted 2 March 2000 by the State Water Resources Control Board. All peaks identified by the EPA test methods shall be reported.

17. When requested by USEPA, the Discharger shall complete and submit Discharge Monitoring Reports. The submittal date shall be no later than the submittal date specified in the Monitoring and Reporting Program for Discharger Self Monitoring Reports.

18. This Order expires on **1 April 2008** and the Discharger must file a Report of Waste Discharge in accordance with Title 23, CCR, not later than 180 days in advance of such

date in application for renewal of waste discharge requirements if it wishes to continue the discharge.

19. The Discharger shall enforce the requirements promulgated under sections 307(b), (c), and (d), and Section 402(b) of the CWA. The Discharger shall cause industrial users subject to federal categorical standards to achieve compliance no later than the date specified in those requirements or, in the case of a new industrial user, upon commencement of the discharge.

20. The Discharger shall implement the necessary legal authorities, programs, and controls to ensure that the following incompatible wastes are not introduced to the treatment system, where incompatible wastes are:

    a. Wastes which create a fire or explosion hazard in the treatment works;

    b. Wastes which will cause corrosive structural damage to treatment works, but in no case wastes with a pH lower than 5.0, unless the works is specially designed to accommodate such wastes;

    c. Solid or viscous wastes in amounts which cause obstruction to flow in sewers, or which cause other interference with proper operation or treatment works;

    d. Any waste, including oxygen demanding pollutants (BOD, etc.), released in such volume or strength as to cause inhibition or disruption in the treatment works, and subsequent treatment process upset and loss of treatment efficiency;

    e. Heat in amounts that inhibit or disrupt biological activity in the treatment works, or that raise influent temperatures above 40°C (104°F), unless the Regional Board approves alternate temperature limits;

    f. Petroleum oil, nonbiodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass through;

    g. Pollutants which result in the presence of toxic gases, vapors, or fumes within the treatment works in a quantity that may cause acute worker health and safety problems; and

    h. Any trucked or hauled pollutants, except at points predesignated by the Discharger.

20. The Discharger shall implement the legal authorities, programs, and controls necessary to ensure that indirect discharges do not introduce pollutants into the sewerage system that, either alone or in conjunction with a discharge or discharges from other sources:

    a. flow through the system to the receiving water in quantities or concentrations that cause a violation of this Order, or

b. inhibit or disrupt treatment processes, treatment system operations, or sludge processes, use, or disposal and either cause a violation of this Order or prevent sludge use or disposal in accordance with this Order.

21. Prior to making any change in the discharge point, place of use, or purpose of use of the wastewater, the Discharger shall obtain approval of, or clearance from the State Water Resources Control Board (Division of Water Rights).

22. In the event of any change in control or ownership of land or waste discharge facilities presently owned or controlled by the Discharger, the Discharger shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to this office.

23. To assume operation under this Order, the succeeding owner or operator must apply in writing to the Executive Officer requesting transfer of the Order. The request must contain the requesting entity's full legal name, the State of incorporation if a corporation, address and telephone number of the persons responsible for contact with the Regional Board and a statement. The statement shall comply with the signatory paragraph of Standard Provision D.6 and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the California Water Code. Transfer shall be approved or disapproved in writing by the Executive Officer.

I, THOMAS R. PINKOS, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 25 April 2003.

THOMAS R. PINKOS, Executive Officer

*JDM (6/20/2003)*

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2003-0061

NPDES NO. CA0082848

FOR

SAN JOAQUIN COUNTY SERVICE AREA 31
FLAG CITY WASTEWATER TREATMENT PLANT
SAN JOAQUIN COUNTY

This Monitoring and Reporting Program is issued pursuant to Water Code Section 13267. The Discharger shall not implement any changes to this Program unless and until the Regional Board or Executive Officer issues a revised Monitoring and Reporting Program. Specific sample station locations shall be established under direction of Regional Board staff, and a description of the stations shall be attached to this Order.

## INFLUENT MONITORING

Samples shall be collected at approximately the same time as effluent samples and should be representative of the influent for the period sampled. Influent monitoring shall include at least the following:

| Constituents | Units | Type of Sample | Sampling Frequency |
|---|---|---|---|
| 20°C $BOD_5$ | mg/l, lbs/day | 24 hr. Composite | Weekly |
| Total Suspended Solids | mg/l, lbs/day | 24 hr. Composite | Weekly |
| Flow | mgd | Meter | Continuous |

## EFFLUENT MONITORING

Effluent samples shall be collected downstream from the last connection through which wastes can be admitted into the outfall. Effluent samples should be representative of the volume and quality of the discharge. Samples collected from the outlet structure of ponds will be considered adequately composited. Time of collection of samples shall be recorded. Effluent monitoring shall include at least the following:

| Constituents | Units | Type of Sample | Sampling Frequency |
|---|---|---|---|

| | | | |
|---|---|---|---|
| Flow | mgd | Meter | Continuous |
| 20°C $BOD_5$ | mg/l, lbs/day | 24 hr. Composite | Weekly |
| Total Suspended Solids | mg/l, lbs/day | 24 hr. Composite | Weekly |
| Settleable Solids | ml/l | Grab | Weekly |
| Total Dissolved Solids | mg/l | Grab or 24 hr. composite | Weekly |
| Electrical Conductivity @25°C | µmhos/cm | Grab or 24 hr. composite | Weekly |
| pH | Number | Grab | Weekly |
| Total Coliform Organisms | MPN/l00 ml | Grab | Twice Weekly |
| Chlorine Residual[(1)(2)] | mg/l | Meter, Grab | Continuous, Weekly |
| Sulfite Residual[(1)(2)] | mg/l | Meter, Grab | Continuous, Weekly |
| Turbidity | NTUs | Meter[(11)] | Continuous |
| Temperature | °F (°C) | Grab | Weekly |
| Hardness (as $CaCO_3$) | mg/l | Grab or 24 hr. composite | Monthly |
| Ammonia (as Nitrogen)[(3)(4)(5)] | mg/l | Grab | Monthly |
| Nitrate (as Nitrogen) | mg/l | Grab | Monthly |
| Nitrite (as Nitrogen) | mg/l | Grab | Monthly |
| Acute Toxicity[(6)(7)] | % Survival | Grab | Quarterly |
| Cyanide | µg/l | Grab | Monthly |
| Barium | µg/l | Grab or 24 hr. composite | Monthly |
| Copper (Total Recoverable)[(8)] | µg/l | Grab or 24 hr. composite | Monthly |
| Manganese | µg/l | Grab or 24 hr. composite | Monthly |
| Dibromochloromethane | µg/l | Grab | Monthly |
| Bromodichloromethane | µg/l | Grab | Monthly |
| Chloroform | µg/l | Grab | Monthly |
| Total Trihalomethanes[(9)] | µg/l | Grab | Monthly |
| Mercury | µg/l | Grab | Monthly |
| Standard Minerals[(10)] | mg/l | Grab or 24 hr. composite | Annually |

(1) Use of continuous monitoring instrumentation for chlorine residual in the effluent is an appropriate method of process control, however, the accuracy of the chlorine analyzers may not be low enough to meet minimum detection levels. Residual sulfite in the effluent indicates that chlorine is not present in the effluent, which can validate a zero residual reading on the chlorine analyzer. Reporting of these two constituents, when sulfite is present and chlorine is zero, sufficiently insures compliance with the chlorine residual limit, as long as the instruments are maintained and calibrated in accordance with the manufactures recommendations. A combination, center-zero dechlorination analyzer can be used to measure both chlorine and sulfite residuals. This type of analyzer provides one output value representing either the chlorine or the sulfite residual. In addition to the

continuous recorder, a weekly grab sample of the effluent shall be analyzed by a certified laboratory for chlorine residual and sulfite residual. Readings from the residual analyzers shall be taken at the time of sampling, and reported with the laboratory results to validate the accuracy of the process control instrumentation.

(2) Report magnitude and duration of all non-zero residual events. Non-zero events are defined as a reading of zero for chlorine residual and a reading of sulfite residual below the minimum detection limit of the continuous residual monitoring device. If the continuous monitoring device is out of service, one grab chlorine residual sample shall be collected per day.

(3) Concurrent with biotoxicity monitoring.

(4) Report as both Total and Un-ionized ammonia.

(5) Temperature and pH shall be determined at the time of ammonia sample collection for the calculation of ammonia effluent limitations, which are to be calculated using Table B (Attachment E).

(6) The acute bioassays samples shall be analyzed using EPA/821-R-02-012, Fifth Edition, or later amendment with Regional Board staff approval. Temperature and pH shall be recorded at the time of bioassay sample collection. Test species shall be fathead minnows (Pimephales promelas), with no pH adjustment unless approved by the Executive Officer.

(7) Concurrent with Ammonia Sampling.

(8) Hardness as $CaCO_3$ shall be measured concurrently with the measurement of copper for determining compliance with copper effluent limitations, which are to be calculated using Table A (Attachment E).

(9) Total trihalomethanes is the sum of bromoform, bromodichloromethane, chloroform and dibromochloromethane.

(10) Standard minerals shall include all major cations and anions and include verification that the analysis is complete (i.e., cation/anion balance).

(11) The turbidity meter shall be stationed immediately after the filters, prior to chlorination and dechlorination.

If the discharge is intermittent rather than continuous, then on the first day of each such intermittent discharge, the Discharger shall monitor and record data for all of the constituents listed above, after which the frequencies of analysis given in the schedule shall apply for the duration of each such intermittent discharge. In no event shall the Discharger be required to monitor and record data more often than twice the frequencies listed in the schedule.

## RECEIVING WATER MONITORING

All receiving water samples shall be grab samples. Receiving water monitoring shall include at least the following:

| Station | Description |
|---|---|
| R-l | 500 feet downstream from the point of discharge on Highline Canal |
| R-2 | 500 feet north of Dredger Cut on Highline Canal |

| Constituents | Units | Station | Sampling Frequency |
|---|---|---|---|

| Constituents | Units | Station | Sampling Frequency |
|---|---|---|---|
| Dissolved Oxygen | mg/l | R-l, R-2 | Monthly |
| pH | Number | R-l, R-2 | Monthly |
| Temperature | °F (°C) | R-l, R-2 | Monthly |
| Hardness (as $CaCO_3$) | mg/l | R-l, R-2 | Monthly |
| Electrical Conductivity @25°C | µmhos/cm | R-l, R-2 | Monthly |
| Ammonia(1) | mg/l | R-l, R-2 | Monthly |
| Chlorine Residual | mg/l | R-l, R-2 | Monthly |

(1) Report as both Total and Un-ionized Ammonia. Temperature and pH shall be determined at the time of Ammonia sample collection for the calculation of Un-ionized Ammonia

In conducting the receiving water sampling, a log shall be kept of the receiving water conditions throughout the reach bounded by the Northern-most end of Highline Canal and Receiving Water Monitoring Station R-2. Attention shall be given to the presence or absence of:

a. Floating or suspended matter
b. Discoloration
c. Bottom deposits
d. Aquatic life
e. Visible films, sheens or coatings
f. Fungi, slimes, or objectionable growths
g. Potential nuisance conditions

Notes on receiving water conditions shall be summarized in the monitoring report.

## THREE SPECIES CHRONIC TOXICITY MONITORING

Chronic toxicity monitoring shall be conducted to determine whether the effluent is contributing toxicity to the receiving water. The testing shall be conducted as specified in USEPA's Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition (EPA/21-R-02-013). Chronic toxicity samples shall be collected from the effluent of the Flag City Wastewater Treatment Plant when discharging to Highline Canal, after the last unit process, prior to its entering the receiving stream. Twenty-four hour composite samples shall be representative of the volume and quality of the discharge. Time of collection samples shall be recorded. Since the discharge is located at the northern end of Highline Canal, dilution and control waters cannot be obtained immediately upstream of the discharge from an area unaffected by the discharge in the receiving waters. Therefore, standard dilution water shall be used. The sensitivity of the test organisms to a reference toxicant shall be determined concurrently with each bioassay and reported with the test results. Both the

reference toxicant and effluent test must meet all test acceptability criteria as specified in the chronic manual. If the test acceptability criteria are not achieved, then the Discharger must re-sample and re-test within 14 days. Chronic toxicity monitoring shall include the following:

Species: *Pimephales promelas, Ceriodaphnia dubia, and Selenastrum capricornutum*

Frequency: *Once per quarter, four quarters per year*

Dilution Series:

| | Dilutions (%) | | | | | Controls |
|---|---|---|---|---|---|---|
| | 100 | 50 | 25 | 12.5 | 6.25 | |
| | | | | | | Lab Water |
| % WWTP Effluent | 100 | 50 | 25 | 12.5 | 6.25 | 0 |
| % Lab Water | 0 | 50 | 75 | 87.5 | 93.75 | 100 |

(1) Discharge point is at the northern end of Highline Canal. Dilution water that is unaffected by the discharge cannot be obtained in the receiving waters immediately upstream of the discharge.

## SLUDGE MONITORING

A composite sample of sludge shall be collected annually in accordance with EPA's POTW Sludge Sampling and Analysis Guidance Document, August 1989, and tested for the following metals:

| | | |
|---|---|---|
| Cadmium | Copper | Nickel |
| Chromium | Lead | Zinc |

Sampling records shall be retained for a minimum of five years. A log shall be kept of sludge quantities generated and of handling and disposal activities. The frequency of entries is discretionary; however, the log should be complete enough to serve as a basis for part of the annual report.

1. **Within 90 days of the effective date of this Order**, and **annually by 30 January** thereafter, the Discharger shall submit:

   a. Annual sludge production in dry tons and percent solids.

   b. A schematic diagram showing sludge handling facilities and a solids flow diagram.

   c. Depth of application and drying time for sludge drying beds.

d. A description of disposal methods, including the following information related to the disposal methods used at the facility. If more than one method is used, include the percentage of annual sludge production disposed by each method.

i. For **landfill disposal**, include (1) the Regional Board's WDR numbers that regulate the landfill(s) used, (2) the present classifications of the landfill(s) used, and (3) the names and locations of the receiving facility(ies).

ii. For **land application,** include (1) location of the site(s), (2) the Regional Board's WDR numbers that regulate the site(s), (3) the application rate in lbs/year (specify wet or dry), and (4) subsequent uses of the land.

iii. For **incineration**, include (1) name and location of the site(s) where sludge incineration occurs, (2) the Regional Board's WDR numbers that regulate the site(s), (3) the disposal method of the ash, and (4) the names and locations of facilities receiving ash (if applicable).

*iv.* For **composting**, include (1) name and location of the site(s) where sludge composting occurs, and (2) the Regional Board's WDR numbers that regulate the site(s).

2. **Within 90 days of the effective date of this Order**, the Discharger shall submit characterization of sludge quality, including sludge percent solids and quantitative results of chemical analysis for the priority pollutants listed in 40 CFR 122 Appendix D, Tables II and III (excluding total phenols). All sludge samples shall be a composite of a minimum of twelve (12) discrete samples taken at equal time intervals over 24 hours. Suggested methods for analysis of sludge are provided in EPA publications titled "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods" and "Test Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater". Recommended analytical holding times for sludge samples should reflect those specified in 40 CFR 136.6.3(e). Other guidance is available in EPA's POTW Sludge Sampling and Analysis Guidance Document, August 1989.

## WATER SUPPLY MONITORING

A sampling station shall be established where a representative sample of the municipal water supply can be obtained. Water supply monitoring shall include at least the following:

| Constituents | Units | Sampling Frequency |
|---|---|---|
| Standard Minerals | mg/l | Annually |
| Electrical Conductivity[(1)] @ 25°C | µmhos/cm | Annually |
| Total Dissolved Solids | mg/l | Annually |

(1) If the water supply is from more than one source, the EC shall be reported as a weighted average and include copies of supporting calculations.

## GROUNDWATER MONITORING

Groundwater monitoring shall commence by **1 September 2004**. Prior to sampling, the groundwater elevations shall be measured and the wells shall be purged at least three well volumes until pH and electrical conductivity have stabilized. Depth to groundwater shall be measured to the nearest 0.01 feet. Samples shall be collected using standard EPA methods. Groundwater monitoring shall include, at a minimum, the following:

| Constituent | Units | Type of Sample | Sampling Frequency |
|---|---|---|---|
| Groundwater elevation | Feet | Measurement | Quarterly |
| Total Dissolved Solids | mg/l | Grab | Quarterly |
| Ammonia as Nitrogen | mg/l | Grab | Quarterly |
| Nitrates as Nitrogen | mg/l | Grab | Quarterly |
| pH | pH Units | Grab | Quarterly |
| Electrical Conductivity @25°C | µmhos/cm | Grab | Quarterly |
| Total Coliform Organisms | MPN/100 ml | Grab | Quarterly |

## REPORTING

Monitoring results shall be submitted to the Regional Board by the **first day** of the second month following sample collection. Quarterly and annual monitoring results shall be submitted by the **first day of the second month following each calendar quarter, semi-annual period, and year**, respectively.

In reporting the monitoring data, the Discharger shall arrange the data in tabular form so that the date, the constituents, and the concentrations are readily discernible. The data shall be summarized in such a manner to illustrate clearly whether the discharge complies with waste discharge requirements. The highest daily maximum for the month, monthly and weekly averages, and medians, and removal efficiencies (%) for BOD and Suspended Solids, should be determined and recorded.

If the Discharger monitors any pollutant at the locations designated herein more frequently than is required by this Order, the results of such monitoring shall be included in the calculation and reporting of the values required in the discharge monitoring report form. Such increased frequency shall be indicated on the discharge monitoring report form.

By **30 January** of each year, the Discharger shall submit a written report to the Executive Officer containing the following:

a. The names, certificate grades, and general responsibilities of all persons employed at the WWTP (Standard Provision A.5).

b. The names and telephone numbers of persons to contact regarding the plant for emergency and routine situations.

c. A statement certifying when the flow meter and other monitoring instruments and devices were last calibrated, including identification of who performed the calibration (Standard Provision C.6).

d. A statement certifying whether the current operation and maintenance manual, and contingency plan, reflect the wastewater treatment plant as currently constructed and operated, and the dates when these documents were last revised and last reviewed for adequacy.

The Discharger may also be requested to submit an annual report to the Regional Board with both tabular and graphical summaries of the monitoring data obtained during the previous year. Any such request shall be made in writing. The report shall discuss the compliance record. If violations have occurred, the report shall also discuss the corrective actions taken and planned to bring the discharge into full compliance with the waste discharge requirements.

All reports submitted in response to this Order shall comply with the signatory requirements of Standard Provision D.6.

The Discharger shall implement the above monitoring program on the first day of the month following effective date of this Order.

Ordered by: _____
THOMAS R. PINKOS, Executive Officer

25 April 2003
(Date)

*JDM (6/20/2003)*

INFORMATION SHEET ORDER NO. R5-2002-0061
SAN JOAQUIN COUNTY SERVICE AREA 31
FLAG CITY WASTEWATER TREATMENT PLANT
SAN JOAQUIN COUNTY

## I. FACILITY BACKGROUND

San Joaquin County Service Area (CSA) No. 31 provides wastewater treatment and disposal services for a commercial development located at the junction of Interstate 5 and State Route 12. San Joaquin County (County) was issued a National Pollutant Discharge Elimination System (NPDES) permit for the Flag City Wastewater Treatment Plant (FCWWTP) by the Regional Water Quality Control Board (Regional Board) on 27 March 1992 (Order No. 92-060). The permit prescribed requirements for the treatment of domestic wastewater and surface water discharge of treated effluent from the Flag City commercial development to Highline Canal. Growth of the development was slow, and influent flows comprised only a fraction of the plant's design capacity of 0.16 million gallons per day (mgd). Due to the extremely light hydraulic and organic loading, the FCWWTP could not reliably produce effluent to meet permit limitations for a surface water discharge. Therefore, since plant startup in late 1995, disposal was to an evaporation and percolation pond. The pond, which was designed as an emergency pond, had adequate disposal capacity, eliminating the need for a surface water discharge. With Discharger concurrence, Regional Board staff recommended that waste discharge requirements be adopted in place of the NPDES permit until the land discharge capability was exhausted. The Regional Board adopted Waste Discharge Requirements Order No. 98-217 on 23 October 1998.

Due to commercial developments constructed at the end of 2001, the influent flow to the FCWWTP nearly doubled. The increased flow exceeds the capacity of the disposal pond. Therefore, the Discharger has applied to the Regional Board for a renewal of their original NPDES permit. The new commercial developments were constructed ahead of schedule and caught the County by surprise. The sudden, unexpected, increase of influent flow forced the County make necessary provisions for wastewater disposal. On a temporary basis, the County is trucking wastewater to the Waterloo 99 Wastewater Treatment Plant, which has extra disposal capacity.

The FCWWTP is exempt from coverage under the NPDES General Permit for Discharges of Storm Water Associated with Industrial Activity, because wastewater flows are less than one mgd.

## II. DESCRIPTION OF TREATMENT FACILITY AND DISCHARGE

The wastewater treatment and disposal facilities consist of extended aeration activated sludge processing, clarification in a "clarator" unit, polymer injection, Dynasand filter system, and chlorination/dechlorination facilities. Waste activated sludge solids are stabilized by aerobic digestion and dewatered by a "Draimad" unit, which introduces an organic polymer to the solids as they are deposited into hanging porous plastic bags. The filtrate that drains from the biosolids is returned to the headworks. The bagged solids are further dried by air and stacked in a covered metal storage unit. Ultimate disposal after testing is by landfilling. The average annual flow in 2001 was 0.02 mgd. However, due to recent new development, the monthly average flow for October 2002 was 0.047 mgd. The Report of Waste Discharge and monitoring data submitted by the Discharger describes the existing discharge in Table 1:

**Table 1: Existing Discharge**

| | |
|---|---|
| Average Annual Flow: | 0.040 million gallons per day (mgd) |
| Daily Peak Wet Weather Flow: | 0.106 mgd |
| Design Average Dry Weather Flow: | 0.160 mgd |

| Constituent | Concentration | |
|---|---|---|
| BOD[2] | 2.9 mg/l (average) | 0.97 lb/Day[1] |
| Total Suspended Solids | 4.1 mg/l (average) | 1.37 lb/Day[1] |
| Ammonia (as Nitrogen) | 1.2 mg/l (average) | 4.9 mg/l (max) |
| Nitrate (as Nitrogen) | 16.5 mg/ l (average) | 91 mg/l (max) |
| Nitrite (as Nitrogen) | 0.03 mg/ l (average) | 0.07 mg/l (max) |
| Total Dissolved Solids | 773 mg/l (annual average) | |
| Electrical Conductivity | 1186 µhmos/cm (annual average) | |
| Chloride | 183 mg/l (annual average) | |
| Aluminum | 20 µg/l (average) | 23 µg/l (max) |
| Antimony | 0.39 µg/l (average) | 0.48 µg/l (max) |
| Arsenic | 5.8 µg/l (average) | 6.8 µg/l (max) |
| Barium | 123 µg/l (average) | 130 µg/l (max) |
| Copper | 20 µg/l (average) | 31 µg/l (max) |
| Cyanide | 7 µg/l (average) | 13 µg/l (max) |
| Iron | 67 µg/l (average) | 150 µg/l (max) |
| Lead | 0.42 µg/l (average) | 0.48 µg/l (max) |
| Manganese | 25 µg/l (average) | 72 µg/l (max) |
| Mercury | 0.0020 µg/l (average) | 0.0034 µg/l (max) |
| Nickel | 4.5 µg/l (average) | 5.5 µg/l (max) |
| Zinc | 62 µg/l (average) | 85 µg/l (max) |
| Chloroform | 54 µg/l (average) | 95 µg/l (max) |
| Dibromochloromethane | 6.5 µg/l (average) | 11 µg/l (max) |
| Bromodichloromethane | 26 µg/l (average) | 47 µg/l (max) |
| Total Trihalomethanes[3] | 87 µg/l (average) | 153 µg/l (max) |

(1) Calculation based on an average daily flow of 0.04 mgd.
(2) 5-day, 20°C biochemical oxygen demand.
(3) Total trihalomethanes is the sum of bromoform, bromodichloromethane, chloroform, and dibromochloromethane.

## III. RECEIVING WATER

### *A. Highline Canal*

The Discharger discharges to the northern-most end of Highline Canal at the point latitude 36°, 6', 25" and longitude 121°, 24', 36". Highline Canal runs in a north/south direction starting at Dredger Cut to the south and terminates approximately 1.7 miles to the north, about 0.6 miles south of State Route 12, and is within the Sacramento-San Joaquin Delta (Delta) boundaries. Highline Canal is situated amongst agricultural lands on all sides. The north end is closed, except for controlled diversions to the Upland Canal and an area of wetlands. The White Slough Wildlife Area wetlands are located midway along the east bank of Highline Canal.

Highline Canal is an agriculture dominated waterbody with very little flow most of the year. Highline Canal is affected by tidal action, with an average high tide surface water elevation of about 5.8 feet and low tide elevation of about 2.8 feet. The surrounding agricultural land is at approximately 0 feet. The agricultural lands and adjacent wetlands are supplied water from Highline Canal.

### *B. Beneficial Uses*

The Regional Board adopted a *Water Quality Control Plan*, *Fourth Edition, for the Sacramento and San Joaquin River Basins* (Basin Plan). The Basin Plan designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve water quality objectives for all waters of the Basin. These waste discharge requirements implement the Basin Plan.

As specified in the Basin Plan, the beneficial uses of the Delta downstream of the discharge as identified in Table II-1 of the Basin Plan, are municipal and domestic supply, agricultural irrigation, agricultural stock watering, industrial process water supply, industrial service supply, water contact recreation, non-contact water recreation, warm freshwater aquatic habitat, cold freshwater aquatic habitat, warm fish migration habitat, cold fish migration habitat, warm spawning habitat, wildlife habitat, and navigation.

Since the beneficial uses vary throughout the Delta, Footnote (8) to Table II-1 allows the Regional Board to evaluate the beneficial uses of waterbodies within the Delta on a case-by-case basis. The Discharger maintains that the application of municipal and industrial water supply, navigation, and water contact recreation beneficial uses are inappropriate for Highline Canal. Furthermore, since the canal ends approximately 1.7 miles north of Dredger Cut, it almost certainly does not serve as a migration route or spawning habitat for cold water species. However, in order to make changes to the beneficial uses designated by the Basin Plan, a Use Attainability Analysis and subsequent site-specific Basin Plan amendment are required. The required studies have not been performed, therefore, the Regional Board cannot change the designated beneficial uses of the receiving water.

### *C. Dilution*

A dilution study was prepared prior to adoption of the 1992 Order. The dilution study calculated the dilution available at the confluence with Dredger Cut; the mixing zone comprised the entire length of Highline Canal. With regard to mixing zones, the Basin Plan states, *"...the Regional Water Board may designate mixing zones within which water quality objectives will not apply provided the discharger has demonstrated to the satisfaction of the Regional Water Board that the mixing zone will not adversely impact beneficial uses... In determining the size of such mixing zones, the Regional Water Board will consider the applicable procedures and guidelines in EPA's Water Quality Standards Handbook and*

*the Technical Support Document for Water Quality-based Toxics Control…"* The Board finds that a mixing zone comprising the entire length of Highline Canal is inappropriate. Thus, due to periods of no diluting flows at the point of discharge, dilution is not granted for the discharge. End-of-pipe effluent limitations are applied in this Order.

### *D. Dissolved Oxygen*

The Basin Plan at page III-5.00 contains a water quality objective for dissolved oxygen of 5.0 mg/l. Dissolved oxygen levels below 5 mg/l have been measured in Highline Canal. The Discharger has not been required to measure effluent dissolved oxygen. However, the Discharger's Report of Waste Discharge reports 3 dissolved oxygen samples ranging from 5.4 – 7.9 mg/l. This Order includes Receiving Water Limitation E.1, which requires that the discharge not cause the receiving water dissolved oxygen concentration drop below 5 mg/l.

### *E. Federal 303(d) Listing, Impaired Water Body*

On 17 May 1999, the United States Environmental Protection Agency (USEPA) released a final decision on the 1998 California 303(d) list of impaired water bodies. The listing for Delta waterways includes: dissolved oxygen (DO) deficiencies, diazinon and chlorpyrifos, which are organo-phosphate pesticides (OP pesticides), organo-chlorine Group A pesticides (including DDT, lindane, and endrin aldehyde), mercury, electrical conductivity, and unknown toxicity. These listings require review and assessment of effluent quality to determine if applicable effluent limitations are necessary.

The USEPA requires the Regional Board to develop total maximum daily loads (TMDLs) for each 303(d) listed pollutant. The specific dates for TMDL presentation to the USEPA are June 2003 for DO deficiencies, December 2005 for mercury and OP pesticides, and December 2011 for Group A pesticides and unknown toxicity.

Under the guidance of the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (SIP) for the USEPA California Toxic Rule (CTR), special conditions such as 303(d) listings (for priority pollutants) automatically qualify a discharge as having a reasonable potential to exceed water quality criteria for the impaired substances. An additional issue of the 303(d) listing is that TMDLs for impaired water bodies are required to be developed. For a priority pollutant undergoing TMDL development, the SIP allows for a compliance schedule of up to 5 years from the effective date of the policy. This does not apply to pollutants that are not covered under the CTR, i.e. DO deficiencies, electrical conductivity, OP pesticides, and unknown toxicity.

## IV. PERMIT EFFLUENT LIMITATIONS

Clean Water Act Section 301 (b)(1) requires NPDES permits to include effluent limitations that achieve technology-based standards and any more stringent limitations necessary to meet water quality standards. Water quality standards include Regional Board Basin Plan beneficial uses and narrative and numeric water quality objectives, SWRCB-adopted standards, and federal standards, including the CTR and NTR. The Basin Plan contains many numeric water quality objectives and contains a narrative toxicity objective that states: "*All waters shall be maintained free of toxic substances in concentrations*

*that produce detrimental physiological responses in human, plant, animal, or aquatic life*." (Basin Plan at III-8.00.) For determining whether there is reasonable potential for an excursion above a narrative objective, the regulations prescribe three discrete methods (40 CFR 122.44 (d)(vi)). The Regional Board often relies on the second method because the USEPA's water quality criteria have been developed using methodologies that are subject to public review, as are the individual recommended criteria guidance documents. USEPA's ambient water quality criteria are used as means of supplementing the integrated approach to toxics control, and in some cases deriving numeric limitations to protect receiving waters from toxicity as required in the Basin Plan's narrative toxicity objective. In addition, when determining effluent limitations for a discharger, the dilution of the effluent in the receiving water may be considered where areas of dilution are defined. However, when a receiving water is impaired by a particular pollutant or stressor, limited or no pollutant assimilative capacity may be available in spite of the available dilution. In these instances, and depending upon the nature of the pollutant, effluent limitations may be set equal to or less than the applicable water quality criteria, which are applied at the point of discharge such that the discharge will not cause or contribute to the receiving stream exceedance of water quality standards established to protect the beneficial uses.

Section 1.3 of the SIP requires the Regional Board to follow specific procedures for each priority pollutant with an applicable criterion or objective to determine if a water quality based effluent limitation is required. In evaluating compliance with the CTR and SIP for this new Order, Regional Board staff utilized ambient surface water quality data submitted by the Discharger. **Attachment D** summarizes receiving water data, maximum effluent concentrations (MECs), and includes aquatic life and human health criteria and Basin Plan objectives for each priority pollutant and other constituents.

Based on the available information the following effluent limitations were included in this Order:

### *A. Water Quality-Based Effluent Limitations (Inorganic Constituents)*

*Barium*

Based on sampling performed by the Discharger on 18 March 2002, the effluent contained a barium concentration of **130 µg/l**. The site-specific Basin Plan objective for barium is **100 µg/l**; therefore, the discharge has a reasonable potential to cause or contribute to an instream excursion of a water quality objective and effluent limitations are necessary. A dilution credit cannot be granted because of periods of no flow in the receiving water. Therefore, the limitation must be equivalent to the site-specific Basin Plan objective. A final barium average monthly effluent limitation of **100 µg/l** is included in this Order.

Based on the sample results in the effluent, the limitations appear to put the Discharger in immediate non-compliance with the Delta site-specific Basin Plan numeric objective for barium. New or modified control measures may be necessary in order to comply with the effluent limitations, and the new or modified control measures cannot be designed, installed and put into operation within 30 calendar days. Furthermore, the effluent limitation for barium is a new regulatory requirement within this permit, which becomes applicable to the waste discharge with the adoption of this Order, which was adopted after

1 July 2000. Therefore, a compliance time schedule for compliance with the barium effluent limits is established in **CDO No. R5-2003-0062** in accordance with Water Code Section 13301, that requires preparation of a pollution prevention plan in compliance with Water Code Section 13263.3.

*Copper*

Based on analytical laboratory reports submitted by the Discharger, the maximum observed constituent concentration in the effluent for copper was **31 µg/l**, as total recoverable metals. The CTR criteria for copper are hardness dependent, with aquatic toxicity increasing at lower hardness. The CTR criteria were calculated as **21 µg/l**, as a 4-day average, and **34 µg/l**, as a 1-hour average, based on a minimum effluent hardness measurement of **270 mg/l** as $CaCO_3$. The site-specific numeric copper Basin Plan objective is **10 µg/l** (dissolved metals) and is independent of hardness. There have been no approved studies to evaluate discharge-specific metal translators for copper; therefore, the dissolved Basin Plan objective translates to a total recoverable concentration of **10.4 µg/l** (using the default USEPA conversion factor of **0.96**). The discharge has a reasonable potential to cause or contribute to an instream excursion above the Basin Plan objective and the CTR criteria making effluent limitations necessary. A dilution credit cannot be granted because of periods of no flow in the receiving water. Effluent limitations have been developed based on the CTR criteria and the site-specific Basin Plan objective. This Order contains final average monthly effluent limitations (AMEL) and maximum daily effluent limitations (MDEL) for total recoverable copper (see **Table A** in **Attachment E**).

Based on the sample results in the effluent, the limitations appear to put the Discharger in immediate non-compliance with the CTR criteria and the Delta site-specific Basin Plan numeric objective for copper. New or modified control measures may be necessary in order to comply with the effluent limitations, and the new or modified control measures cannot be designed, installed and put into operation within 30 calendar days. Furthermore, the effluent limitation for copper is a new regulatory requirement within this permit, which becomes applicable to the waste discharge with the adoption of this Order, which was adopted after 1 July 2000. Therefore, a compliance time schedule for compliance with the copper effluent limits is established in **CDO No. R5-2003-0062** in accordance with Water Code Section 13301, that requires preparation of a pollution prevention plan in compliance with Water Code Section 13263.3.

*Cyanide*

Based on sampling performed by the Discharger on 18 March 2002, the effluent contained a cyanide concentration of **13 µg/l**. The CTR chronic criterion is **5.2 µg/l** and the numeric site-specific Basin Plan objective is **10 µg/l**; therefore, the discharge has a reasonable potential to cause or contribute to an instream excursion of a water quality objective and effluent limitations are necessary. A dilution credit cannot be granted because of periods of no flow in the receiving water. AMEL and MDEL calculations are described in Table 2:

**Table 2: Cyanide**

| | Acute | Chronic |
|---|---|---|
| Criteria (µg/l) [1] | 22 | 5.2 |
| Dilution Credit | No Dilution | No Dilution |
| ECA | 22 | 5.2 |
| ECA Multiplier[2] | 0.321 | 0.527 |
| LTA | 7.0 | 2.7 |
| AMEL Multiplier (95$^{th}$%) | [3] | 1.6 |
| **AMEL (mg/l)** | [3] | **4.3** |
| MDEL Multiplier (99$^{th}$%) | [3] | 3.1 |
| **MDEL (mg/l)** | [3] | **8.5** |

[1] CTR Criteria
[2] ECA Multiplier based on default coefficient of variation of 0.6
[3] Limitations based on chronic LTA (Chronic LTA < Acute LTA)

The Discharger is unable to comply with the cyanide limitations. Section 2.1 of the SIP allows for compliance schedules within the permit for existing discharges where it is demonstrated that it is infeasible for a Discharger to achieve immediate compliance with a CTR criterion. Using the 99% confidence level and 99% probability, as recommended by the TSD and described in Finding 21, an interim performance-based maximum daily limitation of **172 µg/l** was calculated.

Section 2.1 of the SIP provides that: "*Based on an existing discharger's request and demonstration that it is infeasible for the discharger to achieve immediate compliance with a CTR criterion, or with an effluent limitation based on a CTR criterion, the RWQCB may establish a compliance schedule in an NPDES permit*." Section 2.1, further states that compliance schedules may be included in NPDES permits provided that the following justification has been submitted: …*"(a) documentation that diligent efforts have been made to quantify pollutant levels in the discharge and the sources of the pollutant in the waste stream; (b) documentation of source control measures and/or pollution minimization measures efforts currently underway or completed; (c) a proposal for additional or future source control measures, pollutant minimization actions, or waste treatment (i.e., facility upgrades); and (d) a demonstration that the proposed schedule is as short as practicable."* **Provision F.7** of this Order requires the Discharger to provide this information. The new water quality-based effluent limitations for cyanide become effective on **1 July 2003** if the Discharger does not submit a compliance schedule justification to the Regional Board. Otherwise, final water quality-based effluent limitations for cyanide become effective **1 January 2008.**

**Provision F.7** of this Order requires the Discharger to submit a corrective action plan and implementation schedule to assure compliance with the final cyanide effluent limitations. The interim effluent limitations are in effect through **31 December 2007**. As part of the compliance schedule for cyanide, the Discharger shall develop a pollution prevention program in compliance with CWC Section 13263.3(d)(3) and submit an engineering treatment feasibility study as described in **Provisions F.8 and F.9**, respectively.

*Manganese*

The Basin Plan contains a site-specific numeric objective for the Delta of **50 µg/l** for manganese. Furthermore, the Basin Plan states that waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses. At minimum, "…water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs)." The Secondary MCL is **50 µg/l** for manganese.

Based on information included in analytical laboratory reports submitted by the Discharger, manganese in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above water quality standards, specifically the numeric objective and the narrative chemical constituent objective in the Basin Plan. The maximum observed effluent manganese concentration was **72 µg/l**. An AMEL of **50 µg/l** for manganese is included in this Order based on protection of the Basin Plan objectives. The federal regulations at 40 CFR Section 122.44(d)(1)(vi)(A) allows the state to establish effluent limitations using explicit state policy interpreting its narrative criterion.

Based on the sample results in the effluent, the limitations appear to put the Discharger in immediate non-compliance with the Secondary MCL and the Delta site-specific Basin Plan numeric objective for manganese. New or modified control measures may be necessary in order to comply with the effluent limitations, and the new or modified control measures cannot be designed, installed and put into operation within 30 calendar days. Furthermore, the effluent limitation for manganese is a new regulatory requirement within this permit, which becomes applicable to the waste discharge with the adoption of this Order, which was adopted after 1 July 2000. Therefore, a compliance time schedule for compliance with the manganese effluent limits is established in **CDO No. R5-2003-0062** in accordance with Water Code Section 13301, that requires preparation of a pollution prevention plan in compliance with Water Code Section 13263.3.

*Mercury*

Mercury was detected in the effluent in three samples taken in 2002 using "clean technique" USEPA Method 1631. The maximum effluent concentration was **0.0034µg/l**. The current USEPA's ambient water quality criterion (expressed as dissolved concentrations) for continuous concentration of mercury is **0.77 µg/l** (4-day average, chronic criteria), and the CTR (expressed as total recoverable) concentration for the human health protection for consumption of water and aquatic organisms is **0.050 µg/l**. Mercury is listed under the California 303(d) list based on bioaccumulation of mercury in fish tissue. Any loading of mercury from the discharge may have the reasonable potential to cause or contribute to an excursion above the narrative toxicity objective by causing bioaccumulation in fish tissue. Furthermore, health advisories by the DHS remain in effect for human consumption of fish in the Delta due to excessive concentrations of mercury in fish flesh.

The Regional Board plans to adopt Total Maximum Daily Loads (TMDLs) for mercury in the Delta by December 2005. When the TMDL is complete, the Regional Board will adopt appropriate water quality-based concentration and mass loading effluent limits for the discharge. For situations like this, the SIP recommends that mass loading of the bioaccumulative pollutant should be limited in the interim

to representative, current levels pending development of applicable water quality standards. Furthermore, the SIP allows for compliance schedules of up to 15 years. Until the TMDL is completed and water quality-based effluent limits are prescribed, an interim, performance-based, mass loading limit will be prescribed.

The Discharger's sampling of mercury is sufficient to determine reasonable potential, but is not a sufficient database to determine an annual interim mass effluent limitation. Therefore, this Order does not contain an interim performance-based effluent limit for mercury until additional data are obtained. **Provision F.10** of this Order requires the Discharger to conduct one year of monthly monitoring for mercury in the effluent, using a "clean technique" USEPA Method 1631, with monthly mass loadings being calculated for each calendar month, and allows the Regional Board to reopen the Order to establish an interim effluent mass limit for mercury. The final effluent limit for mercury will be determined from an approved TMDL. As part of the compliance schedule for mercury, the Discharger shall develop a pollution prevention program in compliance with CWC Section 13263.3(d)(3) and perform an engineering treatment feasibility study as described in **Provisions F.8 and F.9**, respectively.

### *B. Water Quality-Based Effluent Limitations (Organic Constituents)*

*Bromodichloromethane*

Based on sampling performed by the Discharger on 18 March 2002, the effluent contained a bromodichloromethane concentration of **16 µg/l**. The CTR human health criterion is **0.56 µg/l** and municipal and domestic supply is a beneficial use of the receiving water. Therefore, the discharge has a reasonable potential to cause or contribute to an instream excursion of a water quality objective and effluent limitations are necessary. A dilution credit cannot be granted because of periods of no flow in the receiving water. Effluent limitation calculations are described in Table 3:

**Table 3: Bromodichloromethane**

| | Acute | Chronic |
|---|---|---|
| Criteria (mg/l) | N/A | 0.56 |
| Dilution Credit | N/A | No Dilution |
| ECA | N/A | 0.56 |
| **AMEL (mg/l)**[1] | N/A | **0.56** |
| MDEL/AMEL Multiplier[2] | N/A | 2.01 |
| **MDEL (mg/l)** | N/A | **1.13** |

(1) AMEL = ECA per Section 1.4.B, Step 6 of SIP
(2) Assumes sampling frequency n<=4. Uses MDEL/AMEL multiplier from Table 2 of SIP.

The Discharger is unable to comply with these limitations. Section 2.1 of the SIP allows for compliance schedules within the permit for existing discharges where it is demonstrated that it is infeasible for a Discharger to achieve immediate compliance with a CTR criterion. Using the 99% confidence level and 99% probability, as recommended by the TSD and described in Finding 21, an interim performance-based maximum daily limitation of **263 µg/l** was calculated.

Section 2.1 of the SIP provides that: "*Based on an existing discharger's request and demonstration that it is infeasible for the discharger to achieve immediate compliance with a CTR criterion, or with an*

*effluent limitation based on a CTR criterion, the RWQCB may establish a compliance schedule in an NPDES permit*." Section 2.1, further states that compliance schedules may be included in NPDES permits provided that the following justification has been submitted: …*"(a) documentation that diligent efforts have been made to quantify pollutant levels in the discharge and the sources of the pollutant in the waste stream; (b) documentation of source control measures and/or pollution minimization measures efforts currently underway or completed; (c) a proposal for additional or future source control measures, pollutant minimization actions, or waste treatment (i.e., facility upgrades); and (d) a demonstration that the proposed schedule is as short as practicable."* **Provision F.7** of this Order requires the Discharger to provide this information. The new water quality-based effluent limitations for bromodichloromethane become effective on **1 July 2003** if the Discharger does not submit a compliance schedule justification to the Regional Board. Otherwise, final water quality-based effluent limitations for bromodichloromethane become effective **1 January 2008.**

**Provision F.7** of this Order requires the Discharger to submit a corrective action plan and implementation schedule to assure compliance with the final bromodichloromethane effluent limitations. The interim effluent limitations are in effect through **31 December 2007**. As part of the compliance schedule for bromodichloromethane, the Discharger shall develop a pollution prevention program in compliance with CWC Section 13263.3(d)(3) and submit an engineering treatment feasibility study as described in **Provisions F.8 and F.9**, respectively.

*Dibromochloromethane*

Based on sampling performed by the Discharger on 18 March 2002, the effluent contained a dibromochloromethane concentration of **5.3 µg/l**. The CTR human health criterion is **0.41 µg/l** and municipal and domestic supply is a beneficial use of the receiving water. Therefore, the discharge has a reasonable potential to cause or contribute to an instream excursion of a water quality objective and effluent limitations are necessary. A dilution credit cannot be granted because of periods of no flow in the receiving water. Effluent limitation calculations are described in Table 4:

**Table 4: Dibromochloromethane**

| | Acute | Chronic |
|---|---|---|
| Criteria (mg/l) | N/A | 0.41 |
| Dilution Credit | N/A | No Dilution |
| ECA | N/A | 0.41 |
| **AMEL (mg/l)**[1] | N/A | **0.41** |
| MDEL/AMEL Multiplier[2] | N/A | 2.01 |
| **MDEL (mg/l)** | N/A | **0.82** |

(1) AMEL = ECA per Section 1.4.B, Step 6 of SIP
(2) Assumes sampling frequency n<=4. Uses MDEL/AMEL multiplier from Table 2 of SIP.

The Discharger is unable to comply with these limitations. Section 2.1 of the SIP allows for compliance schedules within the permit for existing discharges where it is demonstrated that it is infeasible for a Discharger to achieve immediate compliance with a CTR criterion. Using the 99% confidence level and 99% probability, as recommended by the TSD and described in Finding 21, an interim performance-based maximum daily limitation of **62 µg/l** was calculated.

Section 2.1 of the SIP provides that: "*Based on an existing discharger's request and demonstration that it is infeasible for the discharger to achieve immediate compliance with a CTR criterion, or with an effluent limitation based on a CTR criterion, the RWQCB may establish a compliance schedule in an NPDES permit*." Section 2.1, further states that compliance schedules may be included in NPDES permits provided that the following justification has been submitted: …*"(a) documentation that diligent efforts have been made to quantify pollutant levels in the discharge and the sources of the pollutant in the waste stream; (b) documentation of source control measures and/or pollution minimization measures efforts currently underway or completed; (c) a proposal for additional or future source control measures, pollutant minimization actions, or waste treatment (i.e., facility upgrades); and (d) a demonstration that the proposed schedule is as short as practicable."* **Provision F.7** of this Order requires the Discharger to provide this information. The new water quality-based effluent limitations for dibromochloromethane become effective on **1 July 2003** if the Discharger does not submit a compliance schedule justification to the Regional Board. Otherwise, final water quality-based effluent limitations for dibromochloromethane become effective **1 January 2008.**

**Provision F.7** of this Order requires the Discharger to submit a corrective action plan and implementation schedule to assure compliance with the final dibromochloromethane effluent limitations. The interim effluent limitations are in effect through **31 December 2007**. As part of the compliance schedule for dibromochloromethane, the Discharger shall develop a pollution prevention program in compliance with CWC Section 13263.3(d)(3) and submit an engineering treatment feasibility study as described in **Provisions F.8 and F.9**, respectively.

*Total Trihalomethanes*

This Order establishes an Effluent Limitation at the Primary MCL for total trihalomethanes (THMs), the sum of bromoform, bromodichloromethane, chloroform and dibromochloromethane, based on protection of the municipal beneficial use of **80 µg/l**. Based on information included in analytical laboratory results submitted by the Discharger, the discharge was found to have an average total THMs concentration of **87 µg/l**, with a maximum concentration of **153 µg/l**. The discharge has a reasonable potential to cause or contribute to an in-stream excursion above the water quality objective for municipal uses by causing exceedance of the primary MCL for total THMs. No dilution is available in the receiving water, therefore, an AMEL of **80 µg/l** for total THMs is included in this Order based on the Basin Plan objective for municipal use.

Based on the sample results in the effluent, the limitations appear to put the Discharger in immediate non-compliance with the primary MCL for total THMs. New or modified control measures may be necessary in order to comply with the effluent limitations, and the new or modified control measures cannot be designed, installed and put into operation within 30 calendar days. Furthermore, the effluent limitation for total THMs is a new regulatory requirement within this permit, which becomes applicable to the waste discharge with the adoption of this Order, which was adopted after 1 July 2000. Therefore, a compliance time schedule for compliance with the total THMs effluent limits is established in **CDO No. R5-2003-0062** in accordance with Water Code Section 13301, that requires preparation of a pollution prevention plan in compliance with Water Code Section 13263.3.

## *C. Water Quality-Based Effluent Limitations (Other Constituents)*

*Ammonia and Nitrates*

Untreated domestic wastewater contains ammonia. Wastewater treatment plants commonly use nitrification and denitrification processes to remove ammonia from the waste stream. Nitrification is a biological process that converts ammonia to nitrate, and denitrification is a process that converts nitrate to nitrogen gas, which is then released to the atmosphere. The Discharger currently operates its extended aeration process in a manner that nitrifies its effluent and discharges low concentrations of ammonia. Because ammonia is in all domestic wastewater, failure to operate the wastewater treatment plant in nitrification mode would present a reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan's narrative toxicity objective. Ammonia is known to cause toxicity to aquatic organisms in surface waters.

The USEPA 1999 Update of Ambient Water Quality Criteria for Ammonia provides the latest applicable water quality criteria for ammonia. Since ammonia is not a priority pollutant; USEPA guidance, rather than the SIP, is applicable for reasonable potential and effluent limitation calculations. The ammonia criteria are calculated using pH and temperature, with the toxicity of ammonia increasing logarithmically as pH increases. Additionally, the chronic ammonia criteria are more stringent when early life stages of fish and invertebrate species are present and the acute criteria are more stringent when salmonids are present.

Since dilution is not available, the temperature and pH of the effluent were used to calculate the appropriate ammonia criteria. As worst-case conditions, early life stages of fish and invertebrate species and salmonids are assumed to be present. Using a maximum measured effluent pH of 8.23 and a maximum measured temperature of 20°C, the acute and chronic ammonia criteria were calculated as **3.6 mg/l** and **1.2 mg/l**, respectively. Based on effluent ammonia data submitted by the Discharger (see Table 5), the maximum effluent ammonia concentration was **4.9 mg/l**, which exceeds both the acute and chronic criteria. This information further shows that the discharge has reasonable potential to cause or contribute to an in-stream excursion above a water quality standard for ammonia. This Order contains average monthly and maximum daily effluent limitations for ammonia, which vary with effluent pH and temperature (see **Table B** in **Attachment E**).

**Table 5: Effluent Ammonia Data**

| 18 Mar 2002 | 25 Mar 2002 | 1 Apr 2002 | 30 Jul 2002 | 24 Sep 2002 |
|---|---|---|---|---|
| 0.3 mg/l | <1.0 mg/l | <1.0 mg/l | 0.3 mg/l | 4.9 mg/l |

Water quality standards for nitrate include state Drinking Water Standards, including the primary MCL for nitrate and USEPA Ambient Water Quality Criteria for protection of human health. These water quality standards are **10 mg/l** nitrate as N. Based on Discharger Self-Monitoriong Reports from March 1998 through July 2002 (**Attachment C**), the effluent exceeded the water quality standard for nitrate in **30** out of **49** samples. The average nitrate effluent concentration was **14 mg/l**, with a maximum of **36 mg/l**. The effluent exceeds the primary MCL for nitrate and effluent limitations are

necessary. A dilution credit cannot be granted because of periods of no flow in the receiving water. Therefore, the limitation must be equivalent to the water quality objective. A final nitrate AMEL of **10 mg/l** is included in this Order.

Based on the sample results in the effluent, the limitations put the Discharger in immediate non-compliance. New or modified control measures may be necessary in order to comply with the effluent limitations, and the new or modified control measures cannot be designed, installed and put into operation within 30 calendar days. Furthermore, the effluent limitations for ammonia and nitrate are new regulatory requirements within this permit, which become applicable to the waste discharge with the adoption of this Order, which was adopted after 1 July 2000. Therefore, a compliance time schedule for compliance with the ammonia and nitrate effluent limits is established in **CDO No. R5-2003-0062** in accordance with Water Code Section 13301. Water Code Section 13385(j)(3) requires the Discharger to prepare and implement a pollution prevention plan pursuant to Section 13263.3 of the Water Code. However, pollution prevention plans address only those constituents that can be effectively reduced by source control measures. Ammonia and nitrate cannot be significantly reduced through source control measures in domestic wastewater. Therefore, a pollution prevention plan is not required. Nevertheless, **CDO No. R5-2003-0062** requires the Discharger to operate the treatment plant in a nitrification/ denitrification mode to the maximum extent practicable until full compliance with the ammonia and nitrate effluent limitations.

*Chlorine Residual*

Chlorine is used as a disinfectant at the FCWWTP and is known to cause toxicity to aquatic organisms. Thus, there is a reasonable potential that the discharge will cause or contribute to an excursion above the narrative toxicity objective. Since chlorine is not a priority pollutant, the Basin Plan and U.S. Environmental Protection Agency (USEPA) guidance govern its regulation in NPDES permits. Furthermore, federal regulations at 40 CFR Section 122.44(d)(1)(vi)(B), allows the state to establish effluent limitations using USEPA's water quality criteria. The USEPA Ambient Water Quality criteria for chlorine are **0.019 mg/l** as a one-hour average and **0.011 mg/l** as a 4-day average, neither of which are to be exceeded more than once every three years. Because chlorine is a toxic constituent that can be and will be monitored continuously, an average one-hour limitation is considered more appropriate than a maximum daily limitation. One-hour average and four-day average effluent limitations for chlorine are included in Order No. R5-2003-0061 based on the USEPA Ambient Water Quality criteria.

*Salinity*

Total dissolved solids (TDS), chloride, and electrical conductivity (EC) are measures of the salt content of water. The presence of dissolved salts in water can be growth limiting to certain agricultural crops and affects the taste of water for human consumption. The Basin Plan states that waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses. Municipal and domestic supply and agricultural irrigation are beneficial uses of the receiving water. The water quality goals for salinity and the annual average effluent concentrations are shown in Table 6 below:

**Table 6: Salinity Data**

| | | | FCWWTP |
|---|---|---|---|

| Constituent | Agricultural WQ Goal | Secondary MCL | Effluent |
|---|---|---|---|
| EC | 700 µhmos/cm | 1000 µhmos/cm | 1186 µhmos/cm |
| TDS | 450 mg/l | 500 mg/l | 773 mg/l |
| Chloride | 106 mg/l | 250 mg/l | 183 mg/l |

Based on analytical reports submitted by the Discharger, the effluent exceeds the salinity water quality goals. Effluent limitations are necessary to protect the beneficial uses of the receiving water. To reduce concentrations of dissolved salts in the effluent, the Discharger may have the ability to develop an effective source control program to minimize dissolved salts discharged into the collection system and/or replace the water supply that averages 735 µhmos/cm.

Highline Canal is a dead end slough with very little flow; therefore, water drawn from the receiving water for irrigation may be undiluted or relatively undiluted effluent. An EC annual average effluent limit of 700 µhmos/cm is included in this Order, based on the EC Agricultural Water Quality Goal. Since EC, Chloride, and TDS are all measurements of salinity, by meeting the effluent limitation for EC, the Discharger will simultaneously reduce the concentrations of chloride and TDS in the discharge. Therefore, there is no need to include effluent limitations for chloride and TDS.

Based on the sample results in the effluent, the limitations appear to put the Discharger in immediate non-compliance with the agricultural water quality goal for EC. New or modified control measures may be necessary in order to comply with the effluent limitations, and the new or modified control measures cannot be designed, installed and put into operation within 30 calendar days. Furthermore, the effluent limitation for EC is a new regulatory requirement within this permit, which becomes applicable to the waste discharge with the adoption of this Order, which was adopted after 1 July 2000. Therefore, a compliance time schedule for compliance with the EC effluent limits is established in **CDO No. R5-2003-0061** in accordance with Water Code Section 13301, that requires preparation of a pollution prevention plan in compliance with Water Code Section 13263.3.

*Temperature*

The State Water Resources Control Board (State Board) Water Quality Control Plan for Control of Temperatures in Coastal and Interstate Waters and Enclosed Bays and Estuaries of California (Thermal Plan) is applicable to this discharge. The Thermal Plan requires that such a discharge shall not exceed a maximum temperature of 86°F and:

*i.* Shall not exceed the natural receiving water temperature by more than 20 °F;

*ii.* Shall not create a zone, defined by water temperatures of more than 1°F above natural receiving water temperature which exceeds 25% of the cross sectional area of a main river channel at any point; and,

*iii.* Shall not cause a surface temperature rise greater than 4 °F above the natural temperature of the receiving waters at any time or place.

Based on receiving water sampling performed from January 2000 to December 2002 by the City of Lodi (**Attachment H**), the winter temperature of Highline Canal averaged **53 °F** while the summer temperature averaged 73 °F. The monitoring was performed approximately 1.5 miles downstream of the proposed discharge at the City of Lodi's R-4 receiving water station. The Discharger has not been required to measure effluent temperature. However, the Report of Waste Discharge reports an average effluent temperature of **68 °F**, based on three samples in March 2002. The effluent temperature exceeds the average winter receiving water temperature by more than **4 °F**. Therefore, the discharge has the reasonable potential to cause or contribute to an excursion above the Basin Plan water quality objective for temperature during the winter. However, there is inadequate information to calculate a final effluent limitation.

Typically, receiving water limitations are imposed in accordance with the Thermal Plan in order to protect the beneficial uses of the receiving water. However, the proposed outfall is at the northern-most end of Highline Canal so there is no upstream flow to determine the natural background conditions. Therefore, it is not possible to apply the portions of the Thermal Plan that require comparisons to natural receiving water temperature. In situations where there is no natural receiving water to determine the natural receiving water temperature, the State Board recommends the development of a site-specific temperature study to determine appropriate temperature controls to be placed on the discharge in order to protect the beneficial uses of the receiving water[1]. In order to protect the beneficial uses of the receiving water, **Provision F.12** of this Order requires the Discharger to perform a temperature study to determine the appropriate temperature controls necessary to comply with the Basin Plan water quality objective for temperature. This Order will be reopened after completion of the temperature study to include final effluent limitations for temperature.

### *D. No Reasonable Potential*

There were several constituents which were detected in the effluent that do not pose a reasonable potential to cause an exceedance of a water quality standard and effluent limits were not included in the Order.

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1 State Water Resources Control Board Order WQO 2002 – 0015, adopted 3 October 2002, regarding WDR Order No. 5-01-044 for the City of Vacaville's Easterly Wastewater Treatment Plant

*Aluminum*
An aluminum concentration of 16 µg/l was measured in the effluent on 18 March 2002. The Primary and Secondary MCLs for aluminum are 1000 µg/l and 200 µg/l respectively. USEPA's ambient Water Quality Criteria for protection of freshwater aquatic life for aluminum expressed as total recoverable are 750 µg/l (1-hour average, acute) and 87 µg/l (4-day average, chronic). Therefore, the discharge does not have a reasonable potential to cause or contribute to an in-stream excursion above a water quality standard for aluminum.

*Arsenic*
An arsenic concentration of 5.1 µg/l was measured in the effluent on 18 March 2002. The State's MCL for arsenic is 50 µg/l. However, on 22 January 2001, USEPA adopted a new primary MCL for arsenic of 10 µg/l (total recoverable). The CTR chronic and acute freshwater criteria for total arsenic concentrations are 150 µg/l and 340 µg/l, respectively. The Basin Plan includes a receiving water objective of 10 µg/l, and the Narrative Toxicity Objective. Based on available effluent data, the discharge does not have a reasonable potential to cause or contribute to an in-stream excursion above a water quality standard for arsenic.

*Zinc*
A zinc concentration of 85 µg/l was measured in the effluent on 18 March 2002. The CTR Water Quality Criteria for zinc expressed as total recoverable concentrations (using conversion factors of 0.978 for acute and 0.986 for chronic) for the protection of freshwater aquatic life for acute and chronic scenarios are 272 µg/l and 274 µg/l respectively based on an effluent hardness of 270 mg/l as $CaCO_3$. The Basin Plan water quality objective is 100 µg/l for zinc. Based on this information, the discharge does not have a reasonable potential to cause or contribute to an in-stream excursion above a water quality standard for zinc. However, only three effluent hardness measurements were available, which may not represent the worst-case condition. Further effluent monitoring is necessary to ensure that the discharge does not have reasonable potential. The Monitoring and Reporting Program No. R5-2003-0061 contains monthly monitoring of effluent hardness.

## V. DISINFECTION

### *A. Policy/Criteria*
Coliform limitations are imposed to protect the beneficial uses of the receiving water, including water contact recreation, and municipal, domestic and agricultural use. There are no regulations, which prescribe necessary levels of disinfection; however, according to the Department of Health Services (DHS), appropriate limitations are based on average receiving water/effluent dilution ratios over a period of time, with the recommendation to impose tertiary standards (pathogen free) when available dilution is less than 20:1. Highline canal is an agriculture dominated waterbody with little or no flow much of the year. The available dilution is well below the 20:1 DHS recommended cutoff level.

The beneficial uses of the receiving water include water contact recreation and agricultural irrigation, which may include crops for human consumption. To protect these beneficial uses, the Regional Board

finds that the wastewater must be disinfected and adequately treated to prevent disease. Recreational uses identified in White Slough and Bishop Cut, approximately 1.7 miles downstream of the FCWWTP outfall, include boating, water skiing, jet skiing, swimming, and fishing (both fish and invertebrates). There are also several agricultural intakes downstream of the discharge in Highline Canal, Dredger Cut, Bishop Cut, and White Slough.

The principal infectious agents (pathogens) that may be present in raw sewage may be classified into three broad groups; bacteria, parasites and viruses. Disinfection by chlorination is effective at killing bacteria and may inactivate some, but not all, of the viruses and parasites. Tertiary treatment, consisting of chemical coagulation, sedimentation and filtration, has been found to remove approximately 99.5% of viruses. Filtration is an effective means of reducing viruses and parasites from the waste stream.

To protect the beneficial use of contact recreation in a receiving stream with less than 20:1 dilution, and where the following conditions exist: (1) The discharge occurs in a residential area; (2) The discharge occurs in an area where there is ready access to the stream and exclusion of the public is not realistic; (3) There have been no historical attempts to post the stream to exclude the public, however, such attempts would likely be unsuccessful, since the stream is used by the public for recreational purposes; (4) The recreation potential, and current use in the stream is high and justified; and (5) Public interest has been identified and the resident population wants or expects body contact recreation, the DHS recommends (Uniform Guidelines for Wastewater Disinfection, November 2000) that the wastewater be oxidized, coagulated, and filtered and the effluent be disinfected such that:

- *The chlorine disinfection process provides a CT (residual chlorine concentration times modal contact time) value of not less than 450 milligram-minutes per liter at all times, with a modal contact time of at least 90 minutes, based on peak dry weather design flow;*
- *Effluent turbidity does not exceed a daily average of 2 nephelometric turbidity units (NTU), does not exceed 5 NTU 5 % of the time or 10 NTU at any time; and*
- *The median concentration of total coliform bacteria measured in the disinfected effluent does not exceed a most probable number (MPN) of 2.2 per 100 ml utilizing the bacteriological results of the last seven days for which analyses have been completed and the number of total coliform bacteria does not exceed a MPN of 23 per 100 ml in more that one sample in any 30 day period. No single sample should exceed a MPN of 240 per 100 ml for total coliform bacteria.*

The Regional Board finds that the discharge meets the DHS conditions that justify the need for increased treatment. These include: the discharge occurs near a residential area; the discharge occurs to a portion of the Delta that is readily accessible to the general public; any attempt to post the receiving water to exclude public access would be unsuccessful; and, the Delta in the vicinity of the discharge is used by the general public for subsistence and sports fishing and water contact recreation.

DHS has developed reclamation criteria, California Code of Regulations, Title 22, Division 4, Chapter 3, (Title 22) for the reuse of wastewater. Title 22 requires that for spray irrigation of food crops, parks, playgrounds, school yards and other areas of similar public access, that wastewater be adequately

disinfected, oxidized, coagulated, clarified and filtered and that the effluent total coliform levels not exceed 2.2 MPN/100 ml as a 7-day median.

Title 22 is not directly applicable to rivers; however, the Regional Board finds that it is appropriate to apply DHS's reclamation criteria because all of the conditions listed above exist and Highline Canal may be used for food crop irrigation. The reclamation criteria are appropriate to apply because contact recreation and agricultural use in the Receiving water would result in similar or greater exposure than the activities specifically included in those regulations and Title 22. Moreover, the more stringent disinfection criteria of Title 22 are appropriate since the inadequately diluted or poorly diluted effluent may be used for the irrigation of food crops.

The Regional Board finds that tertiary treatment (filtration) is required to protect the beneficial uses of water contact recreation and agriculture uses downstream of the discharge. Coliform organisms are intended as an indicator of the effectiveness of the entire treatment train and the effectiveness of removing other pathogens. The method of treatment is not prescribed by this Order, but must meet the level of treatment or equivalent, as specified in DHS's regulations and recommendations. In addition to coliform testing, a turbidity effluent limitation has been included as a second indicator of the effectiveness of the treatment process and to assure compliance with the required level of treatment. The tertiary treatment process, or equivalent, is also capable of reliably meeting a reduced turbidity limitation of 2 NTU as a daily average. Failure of the filtration system such that virus removal is impaired would normally result in increased particles in the effluent, which result in higher effluent turbidity. Turbidity has a major advantage for monitoring filter performance, allowing immediate detection of filter failure and rapid corrective action. Coliform testing, by comparison, is not conducted continuously and requires several hours, to days, to identify high coliform concentrations.

**B.** ***Effluent Limitations***

In accordance with the DHS guidance and recommendations, this Order contains effluent limitations based on Title 22 tertiary treatment requirements for disinfection. The Regional Board finds that this requirement is necessary to protect the beneficial uses of the receiving waters, including public health impacts of recreation uses and irrigation uses of the receiving waters. The FCWWTP has adequate treatment facilities and capacity and is capable of meeting the effluent limitations. However, operational adjustments and installation of new monitoring equipment is necessary to provide consistent compliance with the new effluent limitations. This Order provides a compliance schedule that requires full compliance with Title 22 disinfection requirements by **1 May 2004**.

**C.** ***Economic Considerations***

The Discharger operates tertiary treatment facilities that have the capacity to meet the recommended total coliform limitations and turbidity requirements under DHS Title 22 specifications. Title 22 requires a maximum filter loading rate of 5 gallons per min per square foot. At this loading rate, the existing Dynasand filters have a flow capacity of 0.274 mgd. For chlorination, Title 22 requires a modal detention time of 90 minutes at peak dry weather flow. The existing chlorine contact tank will provide adequate contact time for flows up to 0.14 mgd. Based on flow predictions, the filters and chlorine contact tank should be adequate through the term of this permit. Furthermore, the Discharger uses a

polymer injection system for filter operation that meets the Title 22 disinfection requirements for coagulation and flocculation. The Discharger will, however, need to install additional monitoring devices to fully comply with Title 22 disinfection requirements. Title 22 requires continuous monitoring of turbidity and chlorine residual.

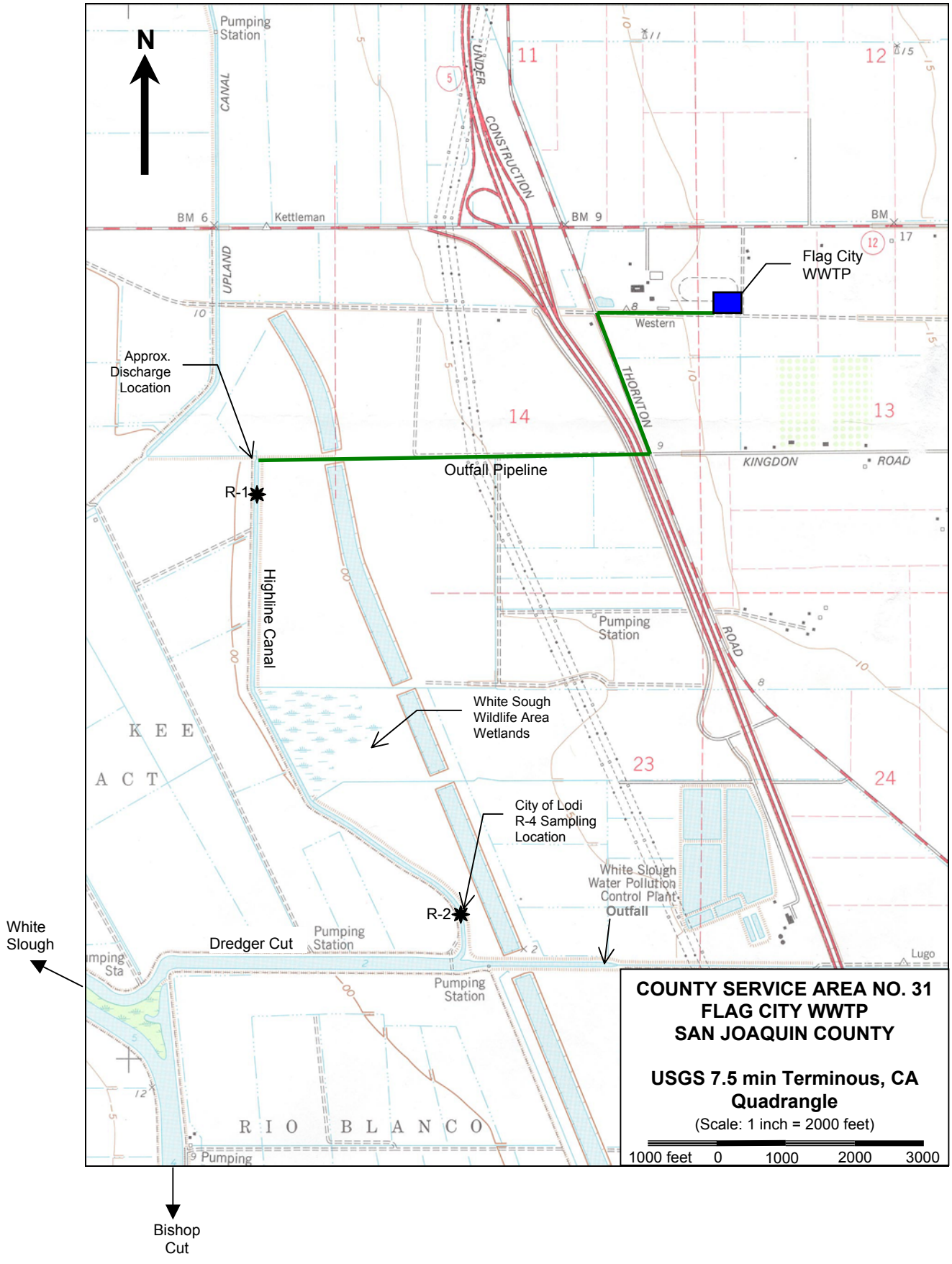
The Regional Board must consider the factors specified in Water Code Section 13263, including considering the provisions of Water Code Section 13241, in adopting the disinfection requirements under Title 22 criteria. Cost information developed for the Discharger by West Yost and Associates regarding upgrades to meet Title 22 disinfection requirements are estimated to be $57,800 to install the necessary monitoring equipment. The increase in operation and maintenance costs will be minimal.

The Regional Board finds, on balance, that these requirements are necessary to protect the beneficial uses of the receiving waters, including water contact recreation and irrigation uses. This Order includes final effluent limitations for turbidity and coliform, which meet Title 22 disinfection requirements. The Discharger is capable of immediately complying with these limitations. A compliance schedule is included in this Order that requires installation of necessary monitoring equipment to fully comply with Title 22 disinfection requirements by **1 May 2004**.

*JDM*

**ATTACHMENT A**

**LOCATION MAP**



# ATTACHMENT B

**FLAG CITY WWTP EFFLUENT DATA (per SIP 13267 Requirement to Submit Monitoring Data)**

| VOLATILE ORGANIC CONSTITUENTS | CAS Number | CTR # | 18-Mar-02 | 30-Jul-02 | 24-Sep-02 | Maximum Effluent Concentration | Units |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethane | 75343 | 28 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | µg/L |
| 1,1-Dichloroethene | 75354 | 30 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | µg/L |
| 1,1,1-Trichloroethane | 71556 | 41 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | µg/L |
| 1,1,2-Trichloroethane | 79005 | 42 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | µg/L |
| 1,1,2,2-Tetrachloroethane | 79345 | 37 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | µg/L |
| 1,2-Dichlorobenzene | 95501 | 75 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | µg/L |
| 1,2-Dichloroethane | 107062 | 29 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | µg/L |
| cis-1,2-Dichloroethene | 156592 | | < 0.50 | < 0.50 | < 0.50 | < 0.50 | µg/L |
| 1,2-Dichloropropane | 78875 | 31 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | µg/L |
| 1,2,4-Trichlorobenzene | 120821 | 101 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | µg/L |
| 1,3-Dichlorobenzene | 541731 | 76 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | µg/L |
| 1,3-Dichloropropylene | 542756 | 32 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | µg/L |
| 1,4-Dichlorobenzene | 106467 | 77 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | µg/L |
| Acrolein | 107028 | 17 | < 5.00 | < 5.00 | < 5.00 | < 5.00 | µg/L |
| Acrylonitrile | 107131 | 18 | < 2.00 | < 2.00 | < 2.00 | < 2.00 | µg/L |
| Benzene | 71432 | 19 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | µg/L |
| Bromoform | 75252 | 20 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | µg/L |
| Bromomethane | 74839 | 34 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | µg/L |
| Carbon tetrachloride | 56235 | 21 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | µg/L |
| Chlorobenzene (mono chlorobenzene) | 108907 | 22 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | µg/L |
| Chloroethane | 75003 | 24 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | µg/L |
| 2- Chloroethyl vinyl ether | 110758 | 25 | < 1.00 | < 1.00 | < 1.00 | < 1.00 | µg/L |
| Chloroform | 67663 | 26 | **24.00** | **95.00** | **43.00** | **95.00** | µg/L |
| Chloromethane | 74873 | 35 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | µg/L |
| Dibromochloromethane | 124481 | 23 | **5.30** | **11.00** | **3.30** | **11.00** | µg/L |
| Bromodichloromethane | 75274 | 27 | **16.00** | **47.00** | **15.00** | **47.00** | µg/L |
| Dichloromethane | 75092 | 36 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | µg/L |
| Ethylbenzene | 100414 | 33 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | µg/L |
| Hexachlorobenzene | 118741 | 88 | < 1.00 | < 1.00 | < 1.00 | < 1.00 | µg/L |
| Hexachlorobutadiene | 87683 | 89 | < 1.00 | < 1.00 | < 1.00 | < 1.00 | µg/L |
| Hexachloroethane | 67721 | 91 | < 1.00 | < 1.00 | < 1.00 | < 1.00 | µg/L |
| Naphthalene | 91203 | 94 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | µg/L |
| Tetrachloroethene | 127184 | 38 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | µg/L |
| Toluene | 108883 | 39 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | µg/L |
| Total Trihalomethanes* | | | **45.55** | **153.25** | **61.55** | **153.25** | µg/L |
| trans-1,2-Dichloroethylene | 156605 | 40 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | µg/L |
| Trichloroethene | 79016 | 43 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | µg/L |
| Vinyl chloride | 75014 | 44 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | µg/L |
| Methyl-tert-butyl ether (MTBE) | 1634044 | | **2.60** | < 0.50 | < 0.50 | **2.60** | µg/L |
| Trichlorofluoromethane | 75694 | | < 0.50 | < 0.50 | < 0.50 | < 0.50 | µg/L |
| 1,1,2-Trichloro-1,2,2-Trifluoroethane | 76131 | | < 1.00 | < 1.00 | < 1.00 | < 1.00 | µg/L |
| Styrene | 100425 | | < 0.50 | < 0.50 | < 0.50 | < 0.50 | µg/L |
| Xylenes | 1330207 | | < 0.50 | < 0.50 | < 0.50 | < 0.50 | µg/L |

* Total trihalomethanes is the sum of bromoform, bromodichloromethane, chloroform, and dibromochloromethane.

## ATTACHMENT B

**FLAG CITY WWTP EFFLUENT DATA (per SIP 13267 Requirement to Submit Monitoring Data)**

| SEMI-VOLATILE ORGANIC CONSTITUENTS | CAS Number | CTR # | 18-Mar-02 | 30-Jul-02 | 24-Sep-02 | Maximum Effluent Concentration | Units |
|---|---|---|---|---|---|---|---|
| 1,2-Benzanthracene | 56553 | 60 | < 0.30 | < 0.30 | < 0.30 | < 0.30 | µg/L |
| 1,2-Diphenylhydrazine | 122667 | 85 | < 1.00 | < 1.00 | < 1.00 | < 1.00 | µg/L |
| 2-Chlorophenol | 95578 | 45 | < 2.00 | < 2.00 | < 2.00 | < 2.00 | µg/L |
| 2,4-Dichlorophenol | 120832 | 46 | < 1.00 | < 1.00 | < 1.00 | < 1.00 | µg/L |
| 2,4-Dimethylphenol | 105679 | 47 | < 2.00 | < 2.00 | < 2.00 | < 2.00 | µg/L |
| 2,4-Dinitrophenol | 51285 | 49 | < 5.00 | < 5.00 | < 5.00 | < 5.00 | µg/L |
| 2,4-Dinitrotoluene | 121142 | 82 | < 5.00 | < 5.00 | < 5.00 | < 5.00 | µg/L |
| 2,4,6-Trichlorophenol | 88062 | 55 | < 5.00 | < 5.00 | < 5.00 | < 5.00 | µg/L |
| 2,6-Dinitrotoluene | 606202 | 83 | < 5.00 | < 5.00 | < 5.00 | < 5.00 | µg/L |
| 2-Nitrophenol | 25154557 | 50 | < 5.00 | < 5.00 | < 5.00 | < 5.00 | µg/L |
| 2-Chloronaphthalene | 91587 | 71 | < 5.00 | < 5.00 | < 5.00 | < 5.00 | µg/L |
| 3,3'-Dichlorobenzidine | 91941 | 78 | < 5.00 | < 5.00 | < 5.00 | < 5.00 | µg/L |
| 3,4-Benzofluoranthene | 205992 | 62 | < 1.00 | < 1.00 | < 1.00 | < 1.00 | µg/L |
| 4-Chloro-3-methylphenol | 59507 | 52 | < 1.00 | < 1.00 | < 1.00 | < 1.00 | µg/L |
| 4,6-Dinitro-2-methylphenol | 534521 | 48 | < 5.00 | < 5.00 | < 5.00 | < 5.00 | µg/L |
| 4-Nitrophenol | 100027 | 51 | < 5.00 | < 5.00 | < 5.00 | < 5.00 | µg/L |
| 4-Bromophenyl phenyl ether | 101553 | 69 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | µg/L |
| 4-Chlorophenyl phenyl ether | 7005723 | 72 | < 5.00 | < 5.00 | < 5.00 | < 5.00 | µg/L |
| Acenaphthene | 83329 | 56 | < 0.30 | < 0.30 | < 0.30 | < 0.30 | µg/L |
| Acenaphthylene | 208968 | 57 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | µg/L |
| Anthracene | 120127 | 58 | < 0.30 | < 0.30 | < 0.30 | < 0.30 | µg/L |
| Benzidine | 92875 | 59 | < 0.30 | < 0.30 | < 0.30 | < 0.30 | µg/L |
| Benzo(a)pyrene (3,4-Benzopyrene) | 50328 | 61 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | µg/L |
| Benzo(g,h,I)perylene | 191242 | 63 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | µg/L |
| Benzo(k)fluoranthene | 207089 | 64 | < 0.30 | < 0.30 | < 0.30 | < 0.30 | µg/L |
| Bis(2-chloroethoxy) methane | 111911 | 65 | < 5.00 | < 5.00 | < 5.00 | < 5.00 | µg/L |
| Bis(2-chloroethyl) ether | 111444 | 66 | < 1.00 | < 1.00 | < 1.00 | < 1.00 | µg/L |
| Bis(2-chloroisopropyl) ether | 39638329 | 67 | < 2.00 | < 2.00 | < 2.00 | < 2.00 | µg/L |
| Bis(2-ethylhexyl) phthalate | 117817 | 68 | < 0.30 | < 0.30 | < 0.30 | < 0.30 | µg/L |
| Butyl benzyl phthalate | 85687 | 70 | < 5.00 | < 5.00 | < 5.00 | < 5.00 | µg/L |
| Chrysene | 218019 | 73 | < 0.30 | < 0.30 | < 0.30 | < 0.30 | µg/L |
| Di-n-butylphthalate | 84742 | 81 | < 5.00 | < 5.00 | < 5.00 | < 5.00 | µg/L |
| Di-n-octylphthalate | 117840 | 84 | < 5.00 | < 5.00 | < 5.00 | < 5.00 | µg/L |
| Dibenzo(a,h)-anthracene | 53703 | 74 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | µg/L |
| Diethyl phthalate | 84662 | 79 | < 2.00 | < 2.00 | < 2.00 | < 2.00 | µg/L |
| Dimethyl phthalate | 131113 | 80 | < 2.00 | < 2.00 | < 2.00 | < 2.00 | µg/L |
| Fluoranthene | 206440 | 86 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | µg/L |
| Fluorene | 86737 | 87 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | µg/L |
| Hexachlorocyclopentadiene | 77474 | 90 | < 1.00 | < 1.00 | < 1.00 | < 1.00 | µg/L |
| Indeno(1,2,3-c,d)pyrene | 193395 | 92 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | µg/L |
| Isophorone | 78591 | 93 | < 1.00 | < 1.00 | < 1.00 | < 1.00 | µg/L |
| N-Nitrosodiphenylamine | 86306 | 98 | < 5.00 | < 5.00 | < 5.00 | < 5.00 | µg/L |
| N-Nitrosodimethylamine | 62759 | 96 | < 1.00 | < 1.00 | < 1.00 | < 1.00 | µg/L |
| N-Nitrosodi-n-propylamine | 621647 | 97 | < 5.00 | < 5.00 | < 5.00 | < 5.00 | µg/L |
| Nitrobenzene | 98953 | 95 | < 1.00 | < 1.00 | < 1.00 | < 1.00 | µg/L |
| Pentachlorophenol | 87865 | 53 | < 5.00 | < 5.00 | < 5.00 | < 5.00 | µg/L |
| Phenanthrene | 85018 | 99 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | µg/L |
| Phenol | 108952 | 54 | < 1.00 | < 1.00 | < 1.00 | < 1.00 | µg/L |
| Pyrene | 129000 | 100 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | µg/L |

# ATTACHMENT B

**FLAG CITY WWTP EFFLUENT DATA (per SIP 13267 Requirement to Submit Monitoring Data)**

| PESTICIDES-PCBs | CAS Number | CTR # | 18-Mar-02 | 30-Jul-02 | 24-Sep-02 | Maximum Effluent Concentration | Units |
|---|---|---|---|---|---|---|---|
| 4,4'-DDD | 72548 | 110 | < 0.01 | < 0.01 | < 0.01 | < 0.01 | µg/L |
| 4,4'-DDE | 72559 | 109 | < 0.01 | < 0.01 | < 0.01 | < 0.01 | µg/L |
| 4,4'-DDT | 50293 | 108 | < 0.01 | < 0.01 | < 0.01 | < 0.01 | µg/L |
| alpha-Endosulfan | 959988 | 112 | < 0.01 | < 0.01 | < 0.01 | < 0.01 | µg/L |
| alpha-Hexachlorocyclohexane (BHC) | 319846 | 103 | < 0.01 | < 0.01 | < 0.01 | < 0.01 | µg/L |
| Alachlor | 15972608 | | < 1.00 | < 1.00 | < 1.00 | < 1.00 | µg/L |
| Aldrin | 309002 | 102 | < 0.05 | < 0.005 | < 0.005 | < 0.05 | µg/L |
| beta-Endosulfan | 33213659 | 113 | < 0.01 | < 0.01 | < 0.01 | < 0.01 | µg/L |
| beta-Hexachlorocyclohexane | 319857 | 104 | < 0.01 | < 0.005 | < 0.005 | < 0.01 | µg/L |
| Chlordane | 57749 | 107 | < 0.01 | < 0.02 | < 0.02 | < 0.02 | µg/L |
| delta-Hexachlorocyclohexane | 319868 | 106 | < 0.01 | < 0.005 | < 0.005 | < 0.01 | µg/L |
| Dieldrin | 60571 | 111 | < 0.01 | < 0.01 | < 0.01 | < 0.01 | µg/L |
| Endosulfan sulfate | 1031078 | 114 | < 0.01 | < 0.01 | < 0.01 | < 0.01 | µg/L |
| Endrin | 72208 | 115 | < 0.01 | < 0.01 | < 0.01 | < 0.01 | µg/L |
| Endrin Aldehyde | 7421934 | 116 | < 0.01 | < 0.01 | < 0.01 | < 0.01 | µg/L |
| Heptachlor | 76448 | 117 | < 0.01 | < 0.01 | < 0.01 | < 0.01 | µg/L |
| Heptachlor Epoxide | 1024573 | 118 | < 0.01 | < 0.01 | < 0.01 | < 0.01 | µg/L |
| Lindane (gamma-BHC) | 58899 | 105 | < 0.01 | < 0.01 | < 0.01 | < 0.01 | µg/L |
| PCB-1016 | 12674112 | 119 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | µg/L |
| PCB-1221 | 11104282 | 120 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | µg/L |
| PCB-1232 | 11141165 | 121 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | µg/L |
| PCB-1242 | 53469219 | 122 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | µg/L |
| PCB-1248 | 12672296 | 123 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | µg/L |
| PCB-1254 | 11097691 | 124 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | µg/L |
| PCB-1260 | 11096825 | 125 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | µg/L |
| Toxaphene | 8001352 | 126 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | µg/L |
| Atrazine | 1912249 | | < 0.10 | < 0.10 | < 0.10 | < 0.10 | µg/L |
| Bentazon | 25057890 | | < 2.00 | < 2.00 | | < 2.00 | µg/L |
| Carbofuran | 1563662 | | < 5.00 | < 5.00 | | < 5.00 | µg/L |
| 2,4-D | 94757 | | < 10.00 | < 10.00 | | < 10.00 | µg/L |
| Dalapon | 75990 | | < 10.00 | < 10.00 | | < 10.00 | µg/L |
| 1,2-Dibromo-3-chloropropane (DBCP) | 96128 | | < 0.01 | < 0.01 | | < 0.01 | µg/L |
| Di(2-ethylhexyl)adipate | 103231 | | < 3.00 | < 3.00 | | < 3.00 | µg/L |
| Dinoseb | 88857 | | < 2.00 | < 2.00 | | < 2.00 | µg/L |
| Diquat | 85007 | | < 4.00 | | | < 4.00 | µg/L |
| Endothal | 145733 | | < 45.00 | < 45.00 | | < 45.00 | µg/L |
| Ethylene Dibromide | 106934 | | < 0.02 | < 0.02 | | < 0.02 | µg/L |
| Glyphosate | 1071836 | | < 25.00 | < 25.00 | | < 25.00 | µg/L |
| Methoxychlor | 72435 | | < 0.01 | < 0.01 | < 0.01 | < 0.01 | µg/L |
| Molinate (Ordram) | 2212671 | | < 0.10 | < 0.10 | < 0.10 | < 0.10 | µg/L |
| Oxamyl | 23135220 | | < 20.00 | < 20.00 | | < 20.00 | µg/L |
| Picloram | 1918021 | | < 1.00 | < 1.00 | | < 1.00 | µg/L |
| Simazine (Princep) | 122349 | | < 0.10 | < 0.10 | < 0.10 | < 0.10 | µg/L |
| Thiobencarb | 28249776 | | < 0.10 | < 0.10 | < 0.10 | < 0.10 | µg/L |
| 2,3,7,8-TCDD (Dioxin) | 1746016 | 16 | | | | | µg/L |
| 2,4,5-TP (Silvex) | 93765 | | < 10.00 | < 1.00 | | < 10.00 | µg/L |
| Diazinon | 333415 | | < 0.60 | < 0.25 | | < 0.60 | µg/L |
| Chlorpyrifos | 2921882 | | < 0.50 | < 0.50 | < 0.50 | < 0.50 | µg/L |

## ATTACHMENT B

**FLAG CITY WWTP EFFLUENT DATA (per SIP 13267 Requirement to Submit Monitoring Data)**

| INORGANIC CONSTITUENTS | CAS Number | CTR # | 18-Mar-02 | 30-Jul-02 | 24-Sep-02 | Maximum Effluent Concentration | Units |
|---|---|---|---|---|---|---|---|
| Aluminum | 7429905 | | **16.00** | **23.00** | **20.00** | **23.00** | µg/L |
| Antimony | 7440360 | 1 | **0.48** | **0.40** | **0.30** | **0.48** | µg/L |
| Arsenic | 7440382 | 2 | **5.10** | **6.80** | **5.50** | **6.80** | µg/L |
| Asbestos | 1332214 | 15 | < 0.20 | | | < 0.20 | µg/L |
| Barium | 7440393 | | **120.00** | **120.00** | **130.00** | **130.00** | µg/L |
| Beryllium | 7440417 | 3 | < 0.20 | < 0.50 | < 0.20 | < 0.50 | µg/L |
| Cadmium | 7440439 | 4 | **0.20** | **0.20** | **0.06** | **0.20** | µg/L |
| Chromium (III) | | | | | | | µg/L |
| Chromium (VI) | 18540299 | 5b | **0.30** | < 0.20 | | **0.30** | µg/L |
| Chromium (total) | 7440473 | 5a | **0.30** | **0.40** | **0.90** | **0.90** | µg/L |
| Copper | 7440508 | 6 | **14.00** | **31.00** | **16.00** | **31.00** | µg/L |
| Cyanide | 57125 | 14 | **13.00** | **4.00** | **4.00** | **13.00** | µg/L |
| Fluoride | 7782414 | | **0.20** | **0.20** | **0.20** | **0.20** | µg/L |
| Iron | 7439896 | | < 50.00 | **150.00** | < 50.00 | **150.00** | µg/L |
| Lead | 7439921 | 7 | **0.48** | **0.41** | **0.38** | **0.48** | µg/L |
| Manganese | 7439965 | | **1.00** | < 2.50 | **72.00** | **72.00** | µg/L |
| Mercury | 7439976 | 8 | **0.0034** | **0.001** | **0.0016** | **0.0034** | µg/L |
| Nickel | 7440020 | 9 | **3.80** | **5.50** | **4.20** | **5.50** | µg/L |
| Selenium | 7782492 | 10 | < 1.00 | **1.00** | **1.00** | **1.00** | µg/L |
| Silver | 7440224 | 11 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | µg/L |
| Thallium | 7440280 | 12 | **0.20** | **0.10** | < 0.10 | **0.20** | µg/L |
| Tributyltin | 688733 | | | | | | µg/L |
| Zinc | 7440666 | 13 | **85.00** | **56.00** | **44.00** | **85.00** | µg/L |
| **OTHER CONSTITUENTS** | | | | | | | |
| Ammonia (as N) | 7664417 | | < 1.00 | **0.30** | **4.90** | **4.90** | mg/L |
| Chloride | 16887006 | | **160** | **150** | **240** | **240** | mg/L |
| Hardness as $CaCO_3$ | | | **270** | **290** | **270** | **270** * | mg/L |
| Foaming Agents (MBAS) | | | **0.06** | < 0.05 | **0.12** | **0.12** | mg/L |
| Nitrate (as N) | 14797558 | | **18** | **40** | **5.20** | **40** | mg/L |
| Nitrite (as N) | 14797650 | | < 0.03 | < 0.03 | **0.07** | **0.07** | mg/L |
| Phosphorus, Total (as P) | 7723140 | | **6.40** | **12** | **10** | **12** | mg/L |
| Specific conductance (EC) | | | **1300** | **1500** | **1600** | **1600** | µmhos/cm |
| Sulfate | | | **38** | **62** | **71** | **71** | mg/L |
| Sulfide (as S) | | | < 0.10 | < 0.10 | < 0.10 | < 0.10 | mg/L |
| Sulfite (as $SO_3$) | | | < 0.50 | < 0.50 | | < 0.50 | mg/L |
| Total Dissolved Solids (TDS) | | | **770** | **860** | **940** | **940** | mg/L |

* Minimum Hardness

## ATTACHMENT C

**FLAG CITY WWTP SELF-MONITORING DATA (MARCH 1998 – OCTOBER 2002)**

| Month-Yr | Flow (mgd) | TSS (mg/L) | BOD (mg/L) | pH | Settelable Solids (ml/L) | Specific Conductance (μhmos/cm) | Nitrate-N (mg/L) | TDS (mg/L) |
|---|---|---|---|---|---|---|---|---|
| Mar-98 | 0.017 | 20 | ND | 8 | ND | *** | 15 | 950 |
| Apr-98 | 0.027 | 20 | 2.1 | 8 | ND | 1300 | 18 | 950 |
| May-98 | 0.011 | ND | 3.4 | 8 | ND | 1400 | 13 | 950 |
| Jun-98 | 0.01 | ND | ND | 7.9 | ND | 1400 | 19 | 960 |
| Jul-98 | 0.011 | ND | ND | 8.1 | ND | 1300 | 13 | 960 |
| Aug-98 | 0.011 | ND | 2.1 | 8.1 | ND | 1400 | 15 | 960 |
| Sep-98 | 0.013 | ND | 2.2 | 7.9 | ND | 1400 | 16 | 810 |
| Oct-98 | 0.01 | ND | 2.2 | 8 | ND | 1400 | *** | 810 |
| Nov-98 | 0.013 | ND | ND | 7.9 | ND | 1200 | 19 | 740 |
| Dec-98 | 0.012 | ND | ND | 7.5 | ND | *** | 29 | 800 |
| Jan-99 | 0.012 | ND | ND | 7.3 | ND | 1200 | 24 | 740 |
| Feb-99 | 0.013 | ND | ND | 7.3 | ND | 1100 | 25 | 750 |
| Mar-99 | 0.014 | 10 | 2 | 7.8 | ND | 1200 | 20 | 730 |
| Apr-99 | April 1999 Discharger Self-monitoring Report missing from files | | | | | | | |
| May-99 | 0.012 | ND | ND | 7.9 | ND | 1100 | 7.5 | 710 |
| Jun-99 | 0.013 | ND | 2.1 | 8.2 | ND | 1110 | 8.1 | 680 |
| Jul-99 | 0.01 | ND | ND | 7.9 | ND | 1210 | 9.7 | 880 |
| Aug-99 | 0.013 | ND | ND | 7.5 | ND | 1290 | 17.8 | 760 |
| Sep-99 | 0.013 | ND | ND | 7.4 | ND | 1150 | 17.8 | 750 |
| Oct-99 | 0.013 | ND | ND | 7.4 | ND | 1100 | 0.2 | 670 |
| Nov-99 | 0.013 | ND | ND | 7.8 | ND | 1130 | 15.7 | 670 |
| Dec-99 | 0.013 | ND | ND | 7.7 | ND | 1110 | 12.5 | 800 |
| Jan-00 | 0.012 | ND | ND | 7.7 | ND | 1200 | 11.2 | 680 |
| Feb-00 | 0.008 | *** | 28 | 7.4 | 2 | 1400 | 13.7 | 860 |
| Mar-00 | 0.007 | ND | ND | 7.4 | 0.1 | 1120 | 14.7 | 810 |
| Apr-00 | 0.012 | ND | 4.5 | 7.97 | 0.1 | 1190 | 7 | 790 |
| May-00 | 0.023 | 4 | 4 | 8.01 | ND | 1360 | 7.6 | 833 |
| Jun-00 | 0.02 | ND | 3 | 8.02 | ND | 1175 | 7 | 760 |
| Jul-00 | 0.023 | ND | 3.4 | 7.81 | ND | 1240 | 6.3 | 710 |
| Aug-00 | 0.013 | 12 | 4.5 | 8.23 | ND | 1210 | 7.75 | 790 |
| Sep-00 | 0.016 | 6 | 3 | 8.03 | ND | 748 | 7.3 | *** |
| Oct-00 | 0.016 | ND | 2.8 | 7.99 | 1.4 | 1169 | ND | 730 |
| Nov-00 | 0.019 | ND | 10 | 7.82 | 3 | *** | *** | 830 |
| Dec-00 | 0.022 | ND | ND | 8.04 | ND | 1165 | 13 | 873 |
| Jan-01 | 0.024 | 14 | 2.8 | 7.89 | 0.7 | 964 | 15.65 | 700 |
| Feb-01 | 0.015 | 8 | ND | 8.2 | ND | 1204 | 14.45 | 822 |
| Mar-01 | 0.015 | 10 | ND | 7.8 | ND | 1300 | 11.25 | 516 |
| Apr-01 | 0.017 | 10 | ND | 8.09 | ND | 1187 | 6.8 | 822 |
| May-01 | 0.017 | 17 | ND | 7.97 | ND | 1126 | 17.2 | 763 |
| Jun-01 | 0.02 | 6 | ND | 8.12 | ND | 1140 | 20 | 800 |
| Jul-01 | 0.017 | 2 | ND | 7.84 | ND | 1140 | 23 | 810 |
| Aug-01 | 0.015 | 4 | ND | 7.88 | ND | 1325 | 36 | 826 |
| Sep-01 | 0.016 | 2 | 2.23 | 6.81 | ND | 719 | 0.17 | 422 |
| Oct-01 | 0.024 | 15 | ND | 7.99 | ND | 1264 | 33.6 | 770 |
| Nov-01 | 0.038 | ND | ND | 8.11 | ND | 1152 | 9.8 | 690 |
| Dec-01 | 0.036 | 6 | ND | 7.34 | ND | 612 | 3.7 | 364 |
| Jan-02 | January 2002 Discharger Self-monitoring Report missing from files | | | | | | | |
| Feb-02 | 0.036 | 13 | 1.1 | 7.92 | ND | 1260 | 6.5 | 750 |
| Mar-02 | 0.036 | 9 | 2 | 7.86 | ND | *** | 7.7 | 770 |
| Apr-02 | 0.037 | 9 | 5 | 7.8 | ND | 863 | 11.25 | 716 |
| May-02 | 0.04 | 17 | 3 | 7.88 | ND | 1355 | 8.1 | 742 |
| Jun-02 | 0.043 | 4 | ND | 7.75 | ND | 1370 | 9 | 840 |
| Jul-02 | 0.044 | 5 | 4 | 7.7 | *** | 1299 | 28 | 840 |
| Average | 0.019 | --- | --- | 7.82 | --- | 1186 | 14.0 | 773 |
| Max | 0.044 | 20 | 28 | 8.23 | 3 | 1400 | 36.0 | 960 |
| Min | 0.007 | --- | --- | 6.81 | --- | 612 | 0.17 | 364 |

*** Data discarded - reported values questionable, not within reasonably expected range.

**REASONABLE POTENTIAL ANALYSIS FOR PRIORITY POLLUTANTS AND OTHER CHEMICAL CONSTITUENTS**

# VOLATILE ORGANIC CONSTITUENTS

| Constituent | CAS Number | CTR # | MEC | B | C | CMC | CCC | Human Health Criteria: Water & Org | Human Health Criteria: Org. Only | Basin Plan | MCL | Reasonable Potential? |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethane | 75343 | 28 | < 0.50 | | 5 | | | | | | 5 | No |
| 1,1-Dichloroethene | 75354 | 30 | < 0.50 | | 0.057 | | | 0.057 | 3.2 | | | Inconclusive |
| 1,1,1-Trichloroethane | 71556 | 41 | < 0.50 | | 200 | | | | | | 200 | No |
| 1,1,2-Trichloroethane | 79005 | 42 | < 0.50 | | 0.6 | | | 0.6 | 42 | | | No |
| 1,1,2,2-Tetrachloroethane | 79345 | 37 | < 0.50 | | 0.17 | | | 0.17 | 11 | | | Inconclusive |
| 1,2-Dichlorobenzene | 95501 | 75 | < 0.50 | | 2700 | | | 2700 | 17000 | | | No |
| 1,2-Dichloroethane | 107062 | 29 | < 0.50 | | 0.38 | | | 0.38 | 99 | | | Inconclusive |
| cis-1,2-Dichloroethene | 156592 | | < 0.50 | | 6 | | | | | | 6 | No |
| 1,2-Dichloropropane | 78875 | 31 | < 0.50 | | 0.52 | | | 0.52 | 39 | | | No |
| 1,2,4-Trichlorobenzene | 120821 | 101 | < 0.50 | | 70 | | | 260 | 940 | | 70 | No |
| 1,3-Dichlorobenzene | 541731 | 76 | < 0.50 | | 400 | | | 400 | 2600 | | | No |
| 1,3-Dichloropropylene | 542756 | 32 | < 0.50 | | 3100 | | | 3100 | 29000 | | | No |
| 1,4-Dichlorobenzene | 106467 | 77 | < 0.50 | | 400 | | | 400 | 2600 | | | No |
| Acrolein | 107028 | 17 | < 5.00 | | 320 | | | 320 | 780 | | | No |
| Acrylonitrile | 107131 | 18 | < 2.00 | | 0.059 | | | 0.059 | 0.66 | | | Inconclusive |
| Benzene | 71432 | 19 | < 0.50 | | 1.2 | | | 1.2 | 71 | | | No |
| Bromoform | 75252 | 20 | 0.50 | | 4.3 | | | 4.3 | 360 | | | No |
| Bromomethane | 74839 | 34 | < 0.50 | | 48 | | | 48 | 4000 | | | No |
| Carbon tetrachloride | 56235 | 21 | < 0.50 | | 0.25 | | | 0.25 | 4.4 | | | Inconclusive |
| Chlorobenzene (mono chlorobenzene) | 108907 | 22 | < 0.50 | | 680 | | | 680 | 21000 | | | No |
| Chloroethane | 75003 | 24 | < 0.50 | | | | | | | | | No |
| 2- Chloroethyl vinyl ether | 110758 | 25 | < 1.00 | | | | | | | | | No |
| Chloroform | 67663 | 26 | 95.00 | | | | | | | | | No |
| Chloromethane | 74873 | 35 | < 0.50 | | | | | | | | | No |
| Dibromochloromethane | 124481 | 23 | 11.00 | | 0.41 | | | 0.41 | 34 | | | Yes, MEC > C |
| Bromodichloromethane | 75274 | 27 | 47.00 | | 0.56 | | | 0.56 | 46 | | | Yes, MEC > C |
| Dichloromethane | 75092 | 36 | < 0.50 | | 4.7 | | | 4.7 | 1600 | | | No |
| Ethylbenzene | 100414 | 33 | < 0.50 | | 3100 | | | 3100 | 29000 | | | No |

ATTACHMENT D

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Hexachlorobenzene** | 118741 | 88 | < 1.00 | | 0.00075 | | | 0.00075 | 0.00077 | | | **Inconclusive** |

# VOLATILE ORGANIC CONSTITUENTS

| Constituent | CAS Number | CTR # | MEC | B | C | CMC | CCC | Human Health Criteria Water & Org | Human Health Criteria Org. Only | Basin Plan | MCL | Reasonable Potential? |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Hexachlorobutadiene** | 87683 | 89 | < 1.00 | | 0.44 | | | 0.44 | 50 | | | **Inconclusive** |
| **Hexachloroethane** | 67721 | 91 | < 1.00 | | 1.9 | | | 1.9 | 8.9 | | | **No** |
| **Naphthalene** | 91203 | 94 | < 0.20 | | | | | | | | | **No** |
| **Tetrachloroethene** | 127184 | 38 | < 0.50 | | 0.8 | | | 0.8 | 8.85 | | | **No** |
| **Toluene** | 108883 | 39 | < 0.50 | | 6800 | | | 6800 | 200000 | | | **No** |
| **Total Trihalomethanes** | | | 153.3 | | 80 | | | | | | 80 (1) | **Yes, MEC > C** |
| **trans-1,2-Dichloroethylene** | 156605 | 40 | < 0.50 | | 700 | | | 700 | 140000 | | | **No** |
| **Trichloroethene** | 79016 | 43 | < 0.50 | | 2.7 | | | 2.7 | 81 | | | **No** |
| **Vinyl chloride** | 75014 | 44 | < 0.50 | | 2 | | | 2 | 525 | | | **No** |
| **Methyl-tert-butyl ether (MTBE)** | 1634044 | | 2.60 | | | | | | | | | **No** |
| **Trichlorofluoromethane** | 75694 | | < 0.50 | | | | | | | | | **No** |
| **1,1,2-Trichloro-1,2,2-Trifluoroethane** | 76131 | | < 1.00 | | | | | | | | | **No** |
| **Styrene** | 100425 | | < 0.50 | | | | | | | | | **No** |
| **Xylenes** | 1330207 | | < 0.50 | | | | | | | | | **No** |

**General Notes:**

All units μg/L unless otherwise noted.

MEC = Maximum Effluent Concentration

B = Maximum Receiving Water Concentration

C = Criteria (Used for reasonable potential analysis)

CMC = Criterion Maximum Concentration (CTR criteria unless otherwise noted)

CCC = Criterion Contiuous Concentration (CTR criteria unless otherwise noted)

MCL = Drinking Water Standards Maximum Contaminant Levels

Basin Plan = Site-specific Basin Plan objective

(1) MCL for total trihalomethanes (sum of bromoform, bromodichloromethane, chloroform, and dibromochloromethane).

# SEMI-VOLATILE ORGANIC CONSTITUENTS

| Constituent | CAS Number | CTR # | MEC | B | C | CMC | CCC | Human Health Criteria | | Basin Plan | MCL | Reasonable Potential? |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Water & Org | Org. Only | | | |
| 1,2-Benzanthracene | 56553 | 60 | < 0.3 | | 0.0044 | | | 0.0044 | 0.049 | | | Inconclusive |
| 1,2-Diphenylhydrazine | 122667 | 85 | < 1 | | 0.04 | | | 0.04 | 0.54 | | | Inconclusive |
| 2-Chlorophenol | 95578 | 45 | < 2 | | 120 | | | 120 | 400 | | | No |
| 2,4-Dichlorophenol | 120832 | 46 | < 1 | | 93 | | | 93 | 790 | | | No |
| 2,4-Dimethylphenol | 105679 | 47 | < 2 | | 540 | | | 540 | 2300 | | | No |
| 2,4-Dinitrophenol | 51285 | 49 | < 5 | | 70 | | | 70 | 14000 | | | No |
| 2,4-Dinitrotoluene | 121142 | 82 | < 5 | | 0.11 | | | 0.11 | 9.1 | | | Inconclusive |
| 2,4,6-Trichlorophenol | 88062 | 55 | < 5 | | 2.1 | | | 2.1 | 6.5 | | | Inconclusive |
| 2,6-Dinitrotoluene | 606202 | 83 | < 5 | | | | | | | | | No |
| 2-Nitrophenol | 25154557 | 50 | < 5 | | | | | | | | | No |
| 2-Chloronaphthalene | 91587 | 71 | < 5 | | 1700 | | | 1700 | 4300 | | | No |
| 3,3'-Dichlorobenzidine | 91941 | 78 | < 5 | | 0.04 | | | 0.04 | 0.077 | | | Inconclusive |
| 3,4-Benzofluoranthene | 205992 | 62 | < 1 | | 0.0044 | | | 0.0044 | 0.049 | | | |
| 4-Chloro-3-methylphenol | 59507 | 52 | < 1 | | | | | | | | | No |
| 4,6-Dinitro-2-methylphenol | 534521 | 48 | < 5 | | 13.4 | | | 13.4 | 765 | | | No |
| 4-Nitrophenol | 100027 | 51 | < 5 | | | | | | | | | No |
| 4-Bromophenyl phenyl ether | 101553 | 69 | < 0.5 | | | | | | | | | No |
| 4-Chlorophenyl phenyl ether | 7005723 | 72 | < 5 | | | | | | | | | No |
| Acenaphthene | 83329 | 56 | < 0.3 | | 1200 | | | 1200 | 2700 | | | No |
| Acenaphthylene | 208968 | 57 | < 0.2 | | | | | | | | | No |
| Anthracene | 120127 | 58 | < 0.3 | | 9600 | | | 9600 | 110000 | | | No |
| Benzidine | 92875 | 59 | < 0.3 | | 0.00012 | | | 0.00012 | 0.00054 | | | Inconclusive |
| Benzo(a)pyrene (3,4-Benzopyrene) | 50328 | 61 | < 0.1 | | 0.0044 | | | 0.0044 | 0.049 | | | Inconclusive |
| Benzo(g,h,i)perylene | 191242 | 63 | < 0.1 | | | | | | | | | No |
| Benzo(k)fluoranthene | 207089 | 64 | < 0.3 | | 0.0044 | | | 0.0044 | 0.049 | | | Inconclusive |
| Bis(2-chloroethoxy) methane | 111911 | 65 | < 5 | | | | | | | | | No |
| Bis(2-chloroethyl) ether | 111444 | 66 | < 1 | | 0.031 | | | 0.031 | 1.4 | | | Inconclusive |
| Bis(2-chloroisopropyl) ether | 39638329 | 67 | < 2 | | 1400 | | | 1400 | 170000 | | | No |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bis(2-ethylhexyl) phthalate** | 117817 | 68 | < 0.3 | | 1.8 | | | 1.8 | 5.9 | | | **No** |

## SEMI-VOLATILE ORGANIC CONSTITUENTS

| Constituent | CAS Number | CTR # | MEC | B | C | CMC | CCC | Human Health Criteria Water & Org | Human Health Criteria Org. Only | Basin Plan | MCL | Reasonable Potential? |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Butyl benzyl phthalate** | 85687 | 70 | < 5 | | 3000 | | | 3000 | 5200 | | | **No** |
| **Chrysene** | 218019 | 73 | < 0.3 | | 0.0044 | | | 0.0044 | 0.049 | | | **Inconclusive** |
| **Di-n-butylphthalate** | 84742 | 81 | < 5 | | 2700 | | | 2700 | 12000 | | | **No** |
| **Di-n-octylphthalate** | 117840 | 84 | < 5 | | | | | | | | | **No** |
| **Dibenzo(a,h)-anthracene** | 53703 | 74 | < 0.1 | | 0.0044 | | | 0.0044 | 0.049 | | | **Inconclusive** |
| **Diethyl phthalate** | 84662 | 79 | < 2 | | 23000 | | | 23000 | 120000 | | | **No** |
| **Dimethyl phthalate** | 131113 | 80 | < 2 | | 313000 | | | 313000 | 2900000 | | | **No** |
| **Fluoranthene** | 206440 | 86 | < 0.05 | | 300 | | | 300 | 370 | | | **No** |
| **Fluorene** | 86737 | 87 | < 0.1 | | 1300 | | | 1300 | 14000 | | | **No** |
| **Hexachlorocyclopentadiene** | 77474 | 90 | < 1 | | 240 | | | 240 | 17000 | | | **No** |
| **Indeno(1,2,3-c,d)pyrene** | 193395 | 92 | < 0.05 | | 0.0044 | | | 0.0044 | 0.049 | | | **Inconclusive** |
| **Isophorone** | 78591 | 93 | < 1 | | 8.4 | | | 8.4 | 600 | | | **No** |
| **N-Nitrosodiphenylamine** | 86306 | 98 | < 5 | | | | | | | | | **No** |
| **N-Nitrosodimethylamine** | 62759 | 96 | < 1 | | 0.00069 | | | 0.00069 | 8.1 | | | **Inconclusive** |
| **N-Nitrosodi-n-propylamine** | 621647 | 97 | < 5 | | 0.005 | | | 0.005 | 1.4 | | | **Inconclusive** |
| **Nitrobenzene** | 98953 | 95 | < 1 | | 17 | | | 17 | 1900 | | | **No** |
| **Pentachlorophenol** | 87865 | 53 | < 5 | | 0.28 | 19 | 15 | 0.28 | 8.2 | | | **Inconclusive** |
| **Phenanthrene** | 85018 | 99 | < 0.05 | | | | | | | | | **No** |
| **Phenol** | 108952 | 54 | < 1 | | 21000 | | | 21000 | 4600000 | | | **No** |
| **Pyrene** | 129000 | 100 | < 0.05 | | 960 | | | 960 | 11000 | | | **No** |

**General Notes:**

All units μg/L unless otherwise noted.

MEC = Maximum Effluent Concentration

B = Maximum Receiving Water Concentration

C = Criteria (Used for reasonable potential analysis)

CMC = Criterion Maximum Concentration (CTR criteria unless otherwise noted)

CCC = Criterion Contiuous Concentration (CTR criteria unless otherwise noted)

MCL = Drinking Water Standards Maximum Contaminant Levels

**REASONABLE POTENTIAL ANALYSIS FOR PRIORITY POLLUTANTS AND OTHER CHEMICAL CONSTITUENTS**

Basin Plan = Site-specific Basin Plan objective

# PESTICIDES – PCBs

| Constituent | CAS Number | CTR # | MEC | B | C | CMC | CCC | Human Health Criteria | | Basin Plan | MCL | Reasonable Potential? |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Water & Org | Org. Only | | | |
| **4,4'-DDD** | 72548 | 110 | < 0.01 | | 0.00083 | | | 0.00083 | 0.00084 | | | **Inconclusive** |
| **4,4'-DDE** | 72559 | 109 | < 0.01 | | 0.00059 | | | 0.00059 | 0.00059 | | | **Inconclusive** |
| **4,4'-DDT** | 50293 | 108 | < 0.01 | | 0.00059 | 1.1 | 0.001 | 0.00059 | 0.00059 | | | **Inconclusive** |
| **alpha-Endosulfan** | 959988 | 112 | < 0.01 | | 0.0087 | 0.22 | 0.056 | 0.0087 | 110 | | | **Inconclusive** |
| **alpha-Hexachlorocyclohexane (BHC)** | 319846 | 103 | < 0.01 | | 0.0039 | | | 0.0039 | 0.013 | | | **Inconclusive** |
| **Alachlor** | 15972608 | | < 1 | | | | | | | | | **No** |
| **Aldrin** | 309002 | 102 | < 0.05 | | 0.00013 | 3 | | 0.00013 | 0.00014 | | | **Inconclusive** |
| **beta-Endosulfan** | 33213659 | 113 | < | | 0.056 | 0.22 | 0.056 | 110 | 240 | | | **No** |
| **beta-Hexachlorocyclohexane** | 319857 | 104 | < 0.005 | | 0.014 | | | 0.014 | 0.046 | | | **No** |
| **Chlordane** | 57749 | 107 | < 0.005 | | 0.00057 | 2.4 | 0.0043 | 0.00057 | 0.00059 | | | **Inconclusive** |
| **delta-Hexachlorocyclohexane** | 319868 | 106 | < 0.01 | | | | | | | | | **No** |
| **Dieldrin** | 60571 | 111 | < | | 0.00014 | 0.24 | 0.056 | 0.00014 | 0.00014 | | | **Inconclusive** |
| **Endosulfan sulfate** | 1031078 | 114 | < | | 110 | | | 110 | 240 | | | **No** |
| **Endrin** | 72208 | 115 | < 0.01 | | 0.036 | 0.086 | 0.036 | 0.76 | 0.81 | | | **No** |
| **Endrin Aldehyde** | 7421934 | 116 | < 0.01 | | 0.76 | | | 0.76 | 0.81 | | | **No** |
| **Heptachlor** | 76448 | 117 | < 0.01 | | 0.00021 | 0.52 | 0.0038 | 0.00021 | 0.00021 | | | **Inconclusive** |
| **Heptachlor Epoxide** | 1024573 | 118 | < 0.01 | | 0.0001 | 0.52 | 0.0038 | 0.0001 | 0.00011 | | | **Inconclusive** |
| **Lindane (gamma-BHC)** | 58899 | 105 | < 0.01 | | 0.019 | 0.95 | | 0.019 | 0.063 | | | **No** |
| **PCB-1016** | 12674112 | 119 | < 0.1 | | 0.00017 | | | 0.00017 | 0.00017 | | | **Inconclusive** |
| **PCB-1221** | 11104282 | 120 | < 0.1 | | 0.0002 | 0.73 | 0.0002 | 0.00073 | 0.00075 | | | **Inconclusive** |
| **PCB-1232** | 11141165 | 121 | < 0.1 | | 0.0002 | 0.73 | 0.0002 | 0.00073 | 0.00075 | | | **Inconclusive** |
| **PCB-1242** | 53469219 | 122 | < 0.1 | | 0.0002 | 0.73 | 0.0002 | 0.00073 | 0.00075 | | | **Inconclusive** |
| **PCB-1248** | 12672296 | 123 | < 0.1 | | 0.0002 | 0.73 | 0.0002 | 0.00073 | 0.00075 | | | **Inconclusive** |
| **PCB-1254** | 11097691 | 124 | < 0.1 | | 0.0002 | 0.73 | 0.0002 | 0.00073 | 0.00075 | | | **Inconclusive** |
| **PCB-1260** | 11096825 | 125 | < 0.1 | | 0.0002 | 0.73 | 0.0002 | 0.00073 | 0.00075 | | | **Inconclusive** |
| **Toxaphene** | 8001352 | 126 | < 0.5 | | 0.0002 | 0.73 | 0.0002 | 0.00073 | 0.00075 | | | **Inconclusive** |
| **Atrazine** | 1912249 | | < 0.1 | | | | | | | | | **No** |
| **Bentazon** | 25057890 | | < 2 | | | | | | | | | **No** |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Carbofuran** | 1563662 | | < 5 | | | | | | | | | **No** |

## PESTICIDES - PCBs

| Constituent | CAS Number | CTR # | MEC | B | C | CMC | CCC | Human Health Criteria Water & Org | Human Health Criteria Org. Only | Basin Plan | MCL | Reasonable Potential? |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **2,4-D** | 94757 | | < 10 | | | | | | | | | **No** |
| **Dalapon** | 75990 | | < 10 | | | | | | | | | **No** |
| **1,2-Dibromo-3-chloropropane (DBCP)** | 96128 | | < 0.01 | | | | | | | | | **No** |
| **Di(2-ethylhexyl)adipate** | 103231 | | < 3 | | | | | | | | | **No** |
| **Dinoseb** | 88857 | | < 2 | | | | | | | | | **No** |
| **Diquat** | 85007 | | < 4 | | | | | | | | | **No** |
| **Endothal** | 145733 | | < | | | | | | | | | **No** |
| **Ethylene Dibromide** | 106934 | | < 0.02 | | | | | | | | | **No** |
| **Glyphosate** | 1071836 | | < 25 | | | | | | | | | **No** |
| **Methoxychlor** | 72435 | | < 0.01 | | | | | | | | | **No** |
| **Molinate (Ordram)** | 2212671 | | < 0.1 | | | | | | | | | **No** |
| **Oxamyl** | 23135220 | | < 20 | | | | | | | | | **No** |
| **Picloram** | 1918021 | | < 1 | | | | | | | | | **No** |
| **Simazine (Princep)** | 122349 | | < 0.1 | | | | | | | | | **No** |
| **Thiobencarb** | 28249776 | | < 0.1 | | | | | | | | | **No** |
| **2,3,7,8-TCDD (Dioxin)** | 1746016 | 16 | | | 0.000000013 | | | 0.000000013 | 0.000000014 | | | **No** |
| **2,4,5-TP (Silvex)** | 93765 | | < 10 | | | | | | | | | **No** |
| **Diazinon** | 333415 | | < 0.6 | | 0.05 | 0.080 (1) | 0.050 (1) | | | | | **Inconclusive** |
| **Chlorpyrifos** | 2921882 | | < 0.5 | | 0.014 | 0.020 (1) | 0.014 (1) | | | | | **Inconclusive** |

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CMC = Criterion Maximum Concentration (CTR criteria unless otherwise noted)

CCC = Criterion Contiuous Concentration (CTR criteria unless otherwise noted)

MCL = Drinking Water Standards Maximum Contaminant Levels

Basin Plan = Site-specific Basin Plan objective

**REASONABLE POTENTIAL ANALYSIS FOR PRIORITY POLLUTANTS AND OTHER CHEMICAL CONSTITUENTS**

(1) Department of Fish and Game March 2000 criteria

# INORGANIC CONSTITUENTS

| Constituent | CAS Number | CTR # | MEC | B | C | Human Health Criteria CMC | CCC | Water & Org | Org. Only | Basin Plan | MCL | Reasonable Potential? |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Aluminum** | 7429905 | | 23.00 | | 87 | 750 (1) | 87 (1) | | | | 200 | **No** |
| **Antimony** | 7440360 | 1 | 0.48 | | 6 | | | 14 | 4300 | | 6 | **No** |
| **Arsenic** | 7440382 | 2 | 6.80 | | 10 | 340.0 | 150.0 | | | 10 | 50 | **No** |
| **Asbestos** | 1332214 | 15 | < 0.20 | | | | | | | | | **No** |
| **Barium** | 7440393 | | 130.00 | | 100 | | | | | 100 | 1000 | **Yes, MEC > C** |
| **Beryllium** | 7440417 | 3 | < 0.20 | | 4 | | | | | | 4 | **No** |
| **Cadmium** | 7440439 | 4 | 0.20 | | 4.66 | 12.5 (2) | 4.7 (2) | | | | 5 | **No** |
| **Chromium (III)** | | | | | 167.18 | 1285.2 (2) | 167.2 (2) | | | | | **No** |
| **Chromium (VI)** | 18540299 | 5b | 0.30 | | 11 | 16.0 | 11.0 | | | | | **No** |
| **Chromium (total)** | 7440473 | 5a | 0.90 | | 50 | | | | | | 50 | **No** |
| **Copper** | 7440508 | 6 | 31.00 | | 10.00 | 34.3 (2) | 20.9 (2) | | | 10 | 1300 | **Yes, MEC > C** |
| **Cyanide** | 57125 | 14 | 13.00 | | 5.2 | 22.0 | 5.2 | | | 10 | 200 | **Yes, MEC > C** |
| **Fluoride** | 7782414 | | 200.00 | | 2000 | | | | | | 2000 | **No** |
| **Iron** | 7439896 | | 150.00 | | 300 | | | | | 300 | 300 | **No** |
| **Lead** | 7439921 | 7 | 0.48 | | 7.28 | 186.8 (2) | 7.3 (2) | | | | 15 | **No** |
| **Manganese** | 7439965 | | 72.00 | | 50 | | | | | 50 | 50 | **Yes, MEC > C** |
| **Mercury** | 7439976 | 8 | 0.0034 | | 0.05 | | | 0.05 | 0.051 | | 2 | **No** |
| **Nickel** | 7440020 | 9 | 5.50 | | 100 | 1084.9 (2) | 120.5 (2) | | | | 100 | **No** |
| **Selenium** | 7782492 | 10 | 1.00 | | 50 | | | | | | 50 | **No** |
| **Silver** | 7440224 | 11 | < 0.10 | | 10 | 19.0 | | | | 10 | 100 | **No** |
| **Thallium** | 7440280 | 12 | 0.20 | | 2 | | | | | | 2 | **No** |
| **Tributyltin** | 688733 | | < 0.004 | | | | | | | | | **No** |
| **Zinc** | 7440666 | 13 | 85.00 | | 100 | 271.9 (2) | 274.1 (2) | | | 100 | 5000 | **No** |

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C = Criteria (Used for reasonable potential analysis)

CMC = Criterion Maximum Concentration (CTR criteria unless otherwise noted)

CCC = Criterion Contiuous Concentration (CTR criteria unless otherwise noted)

MCL = Drinking Water Standards Maximum Contaminant Levels

Basin Plan = Site-specific Basin Plan objective

(1) USEPA National Recommended Ambient Water Quality Criteria, Freshwater Aquatic Life Protection

(2) Calculated using an effluent hardness of 270 mg/L as $CaCO_3$.

# OTHER CONSTITUENTS

| Constituent | CAS Number | CTR # | MEC | B | C | Human Health Criteria CMC | CCC | Water & Org | Org. Only | Basin Plan | MCL | Reasonable Potential? |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ammonia (as N)** | 7664417 | | 4.9 (1) | | 1.20 (1) | 3.61 (1,2) | 1.20 (1,2) | | | | | **Yes, MEC > C** |
| **Chloride** | 16887006 | | 240 (1) | | 230 (1,2) | 860 (1,2) | 230 (1,2) | | | | 250 (1)(4) | **Yes, MEC > C** |
| **Foaming Agents (MBAS)** | | | 120 | | | | | | | | | **No** |
| **Nitrate (as N)** | 14797558 | | 40 (1) | | 10 (1) | | | | | | 10 (1) | **Yes, MEC > C** |
| **Nitrite (as N)** | 14797650 | | 0.07 | | 1 (1) | | | | | | 1 (1) | **No** |
| **Phosphorus, Total (as P)** | 7723140 | | 12 (1) | | | | | | | | | **No** |
| **Specific conductance (EC)** | | | 1600 (3) | | 1000 (3)(4) | | | | | | 1000 (3)(4) | **Yes, MEC > C** |
| **Sulfate** | | | 71 (1) | | | | | | | | | **No** |
| **Sulfide (as S)** | | | < 0.1 | | | | | | | | | **No** |
| **Sulfite (as $SO_3$)** | | | < 0.5 | | | | | | | | | **No** |
| **Total Dissolved Solids (TDS)** | | | 940 (1) | | 500 | | | | | | 500 (1)(4) | **Yes, MEC > C** |

**General Notes:**

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CMC = Criterion Maximum Concentration (CTR criteria unless otherwise noted)

CCC = Criterion Contiuous Concentration (CTR criteria unless otherwise noted)

MCL = Drinking Water Standards Maximum Contaminant Levels

Basin Plan = Site-specific Basin Plan objective

(1) Units in mg/L

(2) USEPA National Recommended Ambient Water Quality Criteria, Freshwater Aquatic Life Protection

(3) Units in μhmos/cm

(4) Salinity agricultural water quality goals are: 106 mg/l, 450 mg/l, and 700 μhmos/cm for chloride, TDS, and EC, respectively

## ATTACHMENT E

***FLAG CITY WWTP Effluent Limitations For Copper using CTR Water Quality Hardness-Dependent Values of the CCC (Chronic Criterion) and CMC (Acute Criterion) for the Protection of Freshwater Aquatic Life and Basin Plan Site-Specific Numeric Objective***

**TABLE A**

| COPPER EXPRESSED AS TOTAL RECOVERABLE | | | | | | |
|---|---|---|---|---|---|---|
| **Effluent Hardness (mg/l as $CaCO_3$)** | **CMC[1] (1-hr avg.)** | **CCC[2] (4-day avg.)** | **$LTA_{acute}$[3]** | **$LTA_{chronic}$[3]** | **AMEL[4][6] (µg/l)** | **MDEL[5][6] (µg/l)** |
| 20 | 3.07 | 2.36 | 0.99 | 1.24 | **1.55** | **3.09** |
| 30 | 4.50 | 3.33 | 1.45 | 1.76 | **2.27** | **4.52** |
| 40 | 5.90 | 4.26 | 1.90 | 2.25 | **2.98** | **5.93** |
| 50 | 7.29 | 5.16 | 2.34 | 2.72 | **3.67** | **7.32** |
| 60 | 8.65 | 6.03 | 2.78 | 3.18 | **4.36** | **8.69** |
| 70 | 10.00 | 6.88 | 3.21 | 3.62 | **5.04** | **10.05** |
| 80 | 11.34 | 7.71 | 3.64 | 4.06 | **5.72** | **10.40** |
| 90 | 12.68 | 8.53 | 4.07 | 4.49 | **6.39** | **10.40** |
| 100 | 14.00 | 9.33 | 4.49 | 4.92 | **7.06** | **10.40** |
| 110 | 15.31 | 10.12 | 4.92 | 5.33 | **7.72** | **10.40** |
| 120 | 16.62 | 10.90 | 5.34 | 5.75 | **8.38** | **10.40** |
| 130 | 17.92 | 11.67 | 5.75 | 6.15 | **9.03** | **10.40** |
| 140 | 19.22 | 12.44 | 6.17 | 6.55 | **9.69** | **10.40** |
| 150 | 20.51 | 13.19 | 6.58 | 6.95 | **10.34** | **10.40** |
| 160 | 21.80 | 13.94 | 7.00 | 7.35 | **10.40** | **10.40** |
| 170 | 23.08 | 14.68 | 7.41 | 7.74 | **10.40** | **10.40** |
| 180 | 24.36 | 15.42 | 7.82 | 8.12 | **10.40** | **10.40** |
| 190 | 25.63 | 16.14 | 8.23 | 8.51 | **10.40** | **10.40** |
| 200 | 26.90 | 16.87 | 8.63 | 8.89 | **10.40** | **10.40** |
| 210 | 28.16 | 17.59 | 9.04 | 9.27 | **10.40** | **10.40** |
| 220 | 29.43 | 18.30 | 9.45 | 9.64 | **10.40** | **10.40** |
| 230 | 30.68 | 19.01 | 9.85 | 10.02 | **10.40** | **10.40** |
| 240 | 31.94 | 19.71 | 10.25 | 10.39 | **10.40** | **10.40** |
| 250 | 33.19 | 20.41 | 10.65 | 10.76 | **10.40** | **10.40** |
| 260 | 34.44 | 21.11 | 11.06 | 11.12 | **10.40** | **10.40** |
| 270 | 35.69 | 21.80 | 11.46 | 11.49 | **10.40** | **10.40** |
| 280 | 36.93 | 22.49 | 11.86 | 11.85 | **10.40** | **10.40** |
| 290 | 38.17 | 23.17 | 12.25 | 12.21 | **10.40** | **10.40** |
| 300 | 39.41 | 23.85 | 12.65 | 12.57 | **10.40** | **10.40** |

(1) Criterion Maximum Concentration, CMC = (0.96) x (exp{$m_A$[ln(hardness)] + $b_A$}), where $m_A$ = 0.9422 and $b_A$ = -1.700

(2) Criterion Continuous Concentration, CCC = (0.96) x (exp{$m_C$[ln(hardness)] + $b_C$}), where $m_C$ = 0.8545 and $b_C$ = -1.700

(3) Acute and Chronic ECA Multipliers calculated at 99th percentile per Section 1.4.B, Step 3 of SIP using a CV = 0.6.

(4) Assumes sampling frequency n=>4. Uses 95th percentile AMEL multiplier per Section 1.4.B, Step 5 of SIP.

(5) Uses 99th percentile MDEL multiplier per Section 1.4.B, Step 5 of SIP.

(6) Maximum AMEL and MDEL (10.4 µg/l) based on Basin Plan site-specific numeric objective (not hardness dependent) for the Sacramento-San Joaquin Delta. Default USEPA conversion factor of 0.96 used to convert dissolved metals criterion to total recoverable metals.

***FLAG CITY WWTP Effluent Limitations For Ammonia using USEPA 1999 Update of Ambient Water Quality Criteria for Ammonia based on the pH- and Temperature-dependent Values of the CCC (Chronic Criterion) and CMC (Acute Criterion) for the Protection of Freshwater Aquatic Life***

**TABLE B**

| Ammonia, mg/l | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | CCC (30-day avg.) Fishes Early Life Stages Present Temperature (°C) | | | | | | | | | CMC (1-hr avg.) |
| pH | <= 14 | 16 | 18 | 20 | 22 | 24 | 26 | 28 | 30 | Salmonids Present |
| 6.0 | 6.95 | 6.32 | 5.55 | 4.88 | 4.29 | 3.77 | 3.31 | 2.91 | 2.56 | 36.7 |
| 6.1 | 6.91 | 6.28 | 5.52 | 4.86 | 4.27 | 3.75 | 3.30 | 2.90 | 2.55 | 36.2 |
| 6.2 | 6.87 | 6.24 | 5.49 | 4.82 | 4.24 | 3.73 | 3.28 | 2.88 | 2.53 | 35.5 |
| 6.3 | 6.82 | 6.19 | 5.45 | 4.79 | 4.21 | 3.70 | 3.25 | 2.86 | 2.51 | 34.7 |
| 6.4 | 6.75 | 6.13 | 5.39 | 4.74 | 4.17 | 3.66 | 3.22 | 2.83 | 2.49 | 33.7 |
| 6.5 | 6.67 | 6.06 | 5.33 | 4.68 | 4.12 | 3.62 | 3.18 | 2.80 | 2.46 | 32.6 |
| 6.6 | 6.57 | 5.97 | 5.25 | 4.61 | 4.05 | 3.56 | 3.13 | 2.75 | 2.42 | 31.3 |
| 6.7 | 6.44 | 5.86 | 5.15 | 4.52 | 3.98 | 3.50 | 3.07 | 2.70 | 2.37 | 29.8 |
| 6.8 | 6.29 | 5.72 | 5.03 | 4.42 | 3.89 | 3.42 | 3.00 | 2.64 | 2.32 | 28.0 |
| 6.9 | 6.12 | 5.56 | 4.89 | 4.30 | 3.78 | 3.32 | 2.92 | 2.57 | 2.25 | 26.2 |
| 7.0 | 5.91 | 5.37 | 4.72 | 4.15 | 3.65 | 3.21 | 2.82 | 2.48 | 2.18 | 24.1 |
| 7.1 | 5.67 | 5.15 | 4.53 | 3.98 | 3.50 | 3.08 | 2.70 | 2.38 | 2.09 | 21.9 |
| 7.2 | 5.39 | 4.90 | 4.31 | 3.78 | 3.33 | 2.92 | 2.57 | 2.26 | 1.99 | 19.7 |
| 7.3 | 5.08 | 4.61 | 4.06 | 3.57 | 3.13 | 2.76 | 2.42 | 2.13 | 1.87 | 17.5 |
| 7.4 | 4.73 | 4.30 | 3.78 | 3.32 | 2.92 | 2.57 | 2.26 | 1.98 | 1.74 | 15.3 |
| 7.5 | 4.36 | 3.97 | 3.49 | 3.06 | 2.69 | 2.37 | 2.08 | 1.83 | 1.61 | 13.3 |
| 7.6 | 3.98 | 3.61 | 3.18 | 2.79 | 2.45 | 2.16 | 1.90 | 1.67 | 1.47 | 11.4 |
| 7.7 | 3.58 | 3.25 | 2.86 | 2.51 | 2.21 | 1.94 | 1.71 | 1.50 | 1.32 | 9.64 |
| 7.8 | 3.18 | 2.89 | 2.54 | 2.23 | 1.96 | 1.73 | 1.52 | 1.33 | 1.17 | 8.11 |
| 7.9 | 2.80 | 2.54 | 2.24 | 1.96 | 1.73 | 1.52 | 1.33 | 1.17 | 1.03 | 6.77 |
| 8.0 | 2.43 | 2.21 | 1.94 | 1.71 | 1.50 | 1.32 | 1.16 | 1.02 | 0.897 | 5.62 |
| 8.1 | 2.10 | 1.91 | 1.68 | 1.47 | 1.29 | 1.14 | 1.00 | 0.879 | 0.773 | 4.64 |
| 8.2 | 1.79 | 1.63 | 1.43 | 1.26 | 1.11 | 0.973 | 0.855 | 0.752 | 0.661 | 3.83 |
| 8.3 | 1.52 | 1.39 | 1.22 | 1.07 | 0.941 | 0.827 | 0.727 | 0.639 | 0.562 | 3.15 |
| 8.4 | 1.29 | 1.17 | 1.03 | 0.906 | 0.796 | 0.700 | 0.615 | 0.541 | 0.475 | 2.59 |
| 8.5 | 1.09 | 0.990 | 0.870 | 0.765 | 0.672 | 0.591 | 0.520 | 0.457 | 0.401 | 2.14 |
| 8.6 | 0.920 | 0.836 | 0.735 | 0.646 | 0.568 | 0.499 | 0.439 | 0.386 | 0.339 | 1.77 |
| 8.7 | 0.778 | 0.707 | 0.622 | 0.547 | 0.480 | 0.422 | 0.371 | 0.326 | 0.287 | 1.47 |
| 8.8 | 0.661 | 0.601 | 0.528 | 0.464 | 0.408 | 0.359 | 0.315 | 0.277 | 0.244 | 1.23 |
| 8.9 | 0.565 | 0.513 | 0.451 | 0.397 | 0.349 | 0.306 | 0.269 | 0.237 | 0.208 | 1.04 |
| 9.0 | 0.486 | 0.442 | 0.389 | 0.342 | 0.300 | 0.264 | 0.232 | 0.204 | 0.179 | 0.885 |

$$CCC = \left( \frac{0.0577}{1+10^{7.688-pH}} + \frac{2.487}{1+10^{pH-7.688}} \right) xMIN\left(2.85, 1.45 \cdot 10^{0.028(25-T)}\right)$$

$$CMC = \left( \frac{0.275}{1+10^{7.204-pH}} + \frac{39.0}{1+10^{pH-7.204}} \right)$$

# ITEMS TO BE INCLUDED IN A MONITORING WELL INSTALLATION WORKPLAN AND A MONITORING WELL INSTALLATION REPORT OF RESULTS

Prior to installation of groundwater monitoring wells, the Discharger shall submit a workplan containing the minimum listed information. Wells may be installed after staff approve the workplan. Upon installation of the monitoring wells, the Discharger shall submit a report of results, as described below. All workplans and reports must be signed by a registered geologist, certified engineering geologist, or civil engineer registered or certified by the State of California.

## Monitoring Well Installation Workplan

A. General Information:
   - Monitoring well locations and rationale
   - Survey details
   - Equipment decontamination procedures
   - Health and safety plan
   - Topographic map showing any existing monitoring wells, proposed wells, waste handling facilities, utilities, and other major physical and man-made features.

B. Drilling Details: describe drilling and logging methods

C. Monitoring Well Design:
   - Casing diameter
   - Borehole diameter
   - Depth of surface seal
   - Well construction materials
   - Diagram of well construction
   - Type of well cap
   - Size of perforations and rationale
   - Grain size of sand pack and rationale
   - Thickness and position of bentonite seal and sand pack
   - Depth of well, length and position of perforated interval

D. Well Development:
   - Method of development to be used
   - Method of determining when development is complete
   - Method of development water disposal

E. Surveying Details: discuss how each well will be surveyed to a common reference point

F. Soil Sampling (if applicable):
- Cuttings disposal method
- Analyses to be run and methods
- Sample collection and preservation method
- Intervals at which soil samples are to be collected
- Number of soil samples to be analyzed and rationale
- Location of soil samples and rationale
- QA/QC procedures

G. Well Sampling:
- Minimum time after development before sampling (48 hours)
- Well purging method and amount of purge water
- Sample collection and preservation method
- Table describing sample volumes, sample containers, preservation agents, and hold times
- QA/QC procedures

H. Water Level Measurement:

The elevation reference point at each monitoring well shall be within 0.01 foot. Ground surface elevation at each monitoring well shall be within 0.1 foot. Method and time of water level measurement shall be specified.

I. Proposed time schedule for work.

**Monitoring Well Installation Report of Results**

A. Well Construction:
- Number and depth of wells drilled
- Date(s) wells drilled
- Description of drilling and construction
- Approximate locations relative to facility site(s)
- A well construction diagram for each well must be included in the report, and should contain the following details:
  - Total depth drilled
  - Depth of open hole (same as total depth drilled if no caving occurs)
  - Footage of hole collapsed
  - Length of slotted casing installed
  - Depth of bottom of casing
  - Depth to top of sand pack
  - Thickness of sand pack
  - Depth to top of bentonite seal
  - Thickness of bentonite seal
  - Thickness of concrete grout
  - Boring diameter
  - Casing diameter

Casing material
Size of perforations
Number of bags of sand
Well elevation at top of casing
Depth to ground water
Date of water level measurement
Monitoring well number
Date drilled
Location

B. Well Development:
Date(s) of development of each well
Method of development
Volume of water purged from well
How well development completion was determined
Method of effluent disposal
Field notes from well development should be included in report.

C. Well Surveying: provide reference elevations for each well and surveyor's notes

D. Water Sampling:
Date(s) of sampling
How well was purged
How many well volumes purged
Levels of temperature, EC, and pH at stabilization
Sample collection, handling, and preservation methods
Sample identification
Analytical methods used
Laboratory analytical data sheets
Water level elevation(s)
Groundwater contour map

E. Soil Sampling (if applicable):
Date(s) of sampling
Sample collection, handling, and preservation method
Sample identification
Analytical methods used
Laboratory analytical data sheets

10 September 2001

REQUIREMENT TO SUBMIT MONITORING DATA

The Regional Water Quality Control Board (Board) is required to protect and enhance the beneficial uses of surface and ground waters in the Region. As part of that effort, National Pollutant Discharge Elimination System (NPDES) Permits are adopted which prescribe effluent limits for the types and concentrations of chemical and physical constituents which can be safely discharged. In order to prepare appropriate NPDES Permits, it is necessary to have adequate characterization of the discharged effluent and the receiving water.

The following is a requirement that you collect effluent and receiving water samples and have them analyzed for a variety of potential waste constituents. In most cases this monitoring will be in addition to monitoring required in your NPDES Permit. To the extent that there is overlap between this request and monitoring already being done under your Permit, the monitoring need not be duplicated. This requirement is brought on by a number of factors:

1. On 2 March 2000, the State Water Resources Control Board adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California*, also known as the State Implementation Policy (SIP). The SIP established methods of evaluating receiving water criteria and developing effluent limitation in NPDES Permits for the priority pollutants contained in the US Environmental Protection Agency's (USEPA) *California Toxics Rule* and portions of USEPA's *National Toxics Rule*. Section 1.2 of the SIP directs the Board to issue Water Code Section 13267 letters to all NPDES dischargers requiring submittal of data sufficient to (1) determine if priority pollutants require effluent limitations (Reasonable Potential Analysis) and (2) calculate water quality-based effluent limitations. Further, Section 2.4 of the SIP requires that each discharger submit to the Regional Boards reports necessary to determine compliance with effluent limitations for priority pollutants in permits. Sections 2.4.1 through 2.4.4 of the SIP provide minimum standards for analyses and reporting. (Copies of the SIP may be obtained from the State Water Resources Control Board, or downloaded from http://www.swrcb.ca.gov/iswp/final.pdf.) To implement the SIP, effluent and receiving water data are needed for all priority pollutants. Effluent and receiving water pH and hardness are required to evaluate the toxicity of certain priority pollutants (such a heavy metals) where the toxicity of the constituents varies with pH and/or hardness. Section 3 of the SIP prescribes mandatory monitoring of dioxin congeners.

2. In addition to the specific requirements of the SIP, the Board is requiring the following monitoring needed for permit development:

    a. Organophosphorous pesticides, principally diazinon and chlorpyrifos, are commonly-used insecticides found in many domestic wastewater discharges at concentrations which can cause toxicity both in effluent and in receiving water. These pesticides are not "priority pollutants" and so are not part of the analytical methods routinely performed for

NPDES discharges. **This monitoring is required of domestic wastewater dischargers only.**

b. Drinking water constituents. Constituents for which drinking water Maximum Contaminant Levels (MCLs) have been prescribed in the California Code of Regulation are included in the *Water Quality Control Plan, Fourth Edition, for the Sacramento and San Joaquin River Basins* (Basin Plan). The Basin Plan defines virtually all surface waters within the Central Valley Region as having existing or potential beneficial uses for municipal and domestic supply. The Basin Plan further requires that, at a minimum, water designated for use as domestic or municipal supply shall not contain concentrations of chemical constituents in excess of the MCLs contained in the California Code of Regulations.

c. Effluent and receiving water temperature. This is both a concern for application of certain temperature sensitive constituents, such as fluoride, and for compliance with the Basin Plan's thermal discharge requirements.

d. Effluent and receiving water hardness and pH. These are necessary because several of the CTR constituents are hardness or pH dependent.

e. Receiving water flow is needed to determine possible dilution available in the receiving water. The receiving water flows, in combination with the receiving water pollutant concentrations, will be used to determine if there is assimilative capacity in the receiving water for each pollutant, and whether dilution credits can be granted. Dilution credits can increase the concentrations of pollutants allowed in your effluent discharge if assimilative capacity is available in the receiving water.

***Pursuant to Section 13267 of the California Water Code, you are required*** to submit monitoring data for your effluent and receiving water as described in Attachments I through IV.

Attachment I – Sampling frequency and number of samples.

Attachment II – Constituents to be monitored. This list identifies the constituents to be monitored. It is organized into groupings (Volatile Organics, Semi-Volatile Organics, Inorganics, Pesticides/Polychlorinated Biphenyls (PCBs), Other Constituents, and Discharge & Receiving Water Flows), which correspond to groupings in Attachment I. Also listed are the Controlling Water Quality Criteria and their concentrations. The criteria concentrations are compiled in the Central Valley Regional Water Board's staff report, *A Compilation of Water Quality Goals.*[1] Minimum quantitation levels for the analysis of the listed constituents will be equal to or less than the Minimum Levels (ML) listed in Appendix 4 of the SIP or the Detection Limits for Reporting Purposes (DLRs) published by the Department of Health Services which are below the controlling water quality criteria concentrations listed in Attachment II of this letter. In cases where the controlling water quality criteria concentrations are below the detection limits of all approved analytical methods, the best available procedure will be utilized that meets the lowest of the MLs and DLR. Also listed are suggested analytical procedures. You are not required to use these specific procedures as long as the procedure you select achieves the desired minimum detection level. All analyses must be performed by a California certified environmental analytical laboratory.

Attachment III – Dioxin and furan sampling. Section 3 of the SIP has specific requirements for the collection of samples for analysis of dioxin and furan congeners, which are detailed in Attachment III. Briefly, dischargers classified as major must collect and analyze two samples per year (one collected in the wet season and one collected in the dry season) for congeners in each of the next three years. For dischargers classified as minor, one wet season and one dry season sample must be collected and analyzed at some time during the next three years.

Attachment IV – Reporting Requirements. This attachment provides laboratory and reporting requirements including a recommended data reporting format.

With the exception of dioxin and furan congener sampling which is due by **1 November 2004** (see Attachment III), all samples shall be collected, analyses completed, and monitoring data shall be submitted to the Regional Board by **1 March 2003**. Any NPDES permit application submitted after **1 March 2002** shall include with the application at least one set of data for the constituents listed in Attachment II.

In the interest of generating and submitting data by the required dates, a schedule for compliance with this data request shall be prepared and submitted to the Executive Officer by **16 November 2001**. This schedule shall include the requirements of Attachment I and Attachment III. The schedule will also include the data submission requirements for applications submitted after **1 March 2002**.

Failure or refusal to submit technical or monitoring data as required by Section 13267, California Water Code, or falsifying any information provided is guilty of a misdemeanor and is subject to an administrative civil liability of up to $1,000 per day of violation, in accordance with Section 13268, California Water Code.1

If you have any questions, please contact your Regional Board staff representative.

GARY M. CARLTON
Executive Officer

Attachments (4)

1 Available on the internet at http://www.swrcb.ca.gov/rwqcb5/wq_goals.

Attachment I – Sampling Frequency and Number of Samples (Minor Municipal)

Samples shall be collected from the effluent and upstream receiving water and analyzed for the constituents listed in Attachment II to provide the indicated number of valid sample results by the submittal due date. Sampling frequency shall be adjusted so that the appropriate number of samples is collected by the due date and so that the sampling is representative of the wastewater discharge.

| **Constituent/Sample Type**[1] | **Frequency** | **Timeframe (years)** | **Total Number of Samples** |
|---|---|---|---|
| Volatile Organics/grab | Quarterly | 1 | 4 |
| Semi-Volatile Organics/grab or composite | Quarterly | 1 | 4 |
| Inorganics/grab or composite | Quarterly | 1 | 4 |
| Pesticides & PCBs/grab or composite | Quarterly | 1 | 4 |
| Other Constituents[2]/grab or composite | Quarterly | 1 | 4 |
| Discharge & Receiving Water Flow[3] | Monthly | 1 | 12 |
| Dioxins/grab or composite | Semi-annual | 1 | 2 |

1 The effluent sampling station and the upstream receiving water station specified in the NPDES Permit Monitoring and Reporting Program should be used.

2 See list in Attachment II.

3 Discharge and Receiving Water Flow. Discharge flow should be recorded and reported for each day of sample collection. All NPDES dischargers should have a means of measuring the volume of discharge as part of their monitoring already required by the NPDES Permit Monitoring and Reporting Program. Receiving Water Flow, however, is not generally required by NPDES Permit Monitoring Programs. For facilities that already conduct receiving water flow monitoring, the receiving water flow should be recorded and reported for each day in which sampling occurs. For facilities that do not routinely conduct receiving water flow monitoring, provide the best estimate of flow reasonably obtainable. It may be possible to obtain flow data from an existing nearby gauging station.

## Attachment II - Constituents to be monitored

| | | | Controlling Water Quality Criterion for Surface Waters | | | |
|---|---|---|---|---|---|---|
| CTR # | Constituent | CAS Number | Basis | Criterion Concentration (ug/L or noted) (1) | Criterion Quantitation Limit (ug/L or noted) | Suggested Test Methods |
| **VOLATILE ORGANICS** | | | | | | |
| 28 | 1,1-Dichloroethane | 75343 | Primary MCL | 5 | 0.5 | EPA 8260B |
| 30 | 1,1-Dichloroethene | 75354 | National Toxics Rule | 0.057 | 0.5 | EPA 8260B |
| 41 | 1,1,1-Trichloroethane | 71556 | Primary MCL | 200 | 0.5 | EPA 8260B |
| 42 | 1,1,2-Trichloroethane | 79005 | National Toxics Rule | 0.6 | 0.5 | EPA 8260B |
| 37 | 1,1,2,2-Tetrachloroethane | 79345 | National Toxics Rule | 0.17 | 0.5 | EPA 8260B |
| 75 | 1,2-Dichlorobenzene | 95501 | Taste & Odor | 10 | 0.5 | EPA 8260B |
| 29 | 1,2-Dichloroethane | 107062 | National Toxics Rule | 0.38 | 0.5 | EPA 8260B |
| | cis-1,2-Dichloroethene | 156592 | Primary MCL | 6 | 0.5 | EPA 8260B |
| 31 | 1,2-Dichloropropane | 78875 | Calif. Toxics Rule | 0.52 | 0.5 | EPA 8260B |
| 101 | 1,2,4-Trichlorobenzene | 120821 | Public Health Goal | 5 | 0.5 | EPA 8260B |
| 76 | 1,3-Dichlorobenzene | 541731 | Taste & Odor | 10 | 0.5 | EPA 8260B |
| 32 | 1,3-Dichloropropene | 542756 | Primary MCL | 0.5 | 0.5 | EPA 8260B |
| 77 | 1,4-Dichlorobenzene | 106467 | Primary MCL | 5 | 0.5 | EPA 8260B |
| 17 | Acrolein | 107028 | Aquatic Toxicity | 21 | 2 | EPA 8260B |
| 18 | Acrylonitrile | 107131 | National Toxics Rule | 0.059 | 2 | EPA 8260B |
| 19 | Benzene | 71432 | Primary MCL | 1 | 0.5 | EPA 8260B |
| 20 | Bromoform | 75252 | Calif. Toxics Rule | 4.3 | 0.5 | EPA 8260B |
| 34 | Bromomethane | 74839 | Calif. Toxics Rule | 48 | 1 | EPA 8260B |
| 21 | Carbon tetrachloride | 56235 | National Toxics Rule | 0.25 | 0.5 | EPA 8260B |
| 22 | Chlorobenzene (mono chlorobenzene) | 108907 | Taste & Odor | 50 | 0.5 | EPA 8260B |
| 24 | Chloroethane | 75003 | Taste & Odor | 16 | 0.5 | EPA 8260B |
| 25 | 2- Chloroethyl vinyl ether | 110758 | Aquatic Toxicity | 122 (3) | 1 | EPA 8260B |
| 26 | Chloroform | 67663 | OEHHA Cancer Risk | 1.1 | 0.5 | EPA 8260B |
| 35 | Chloromethane | 74873 | USEPA Health Advisory | 3 | 0.5 | EPA 8260B |
| 23 | Dibromochloromethane | 124481 | Calif. Toxics Rule | 0.41 | 0.5 | EPA 8260B |
| 27 | Dichlorobromomethane | 75274 | Calif. Toxics Rule | 0.56 | 0.5 | EPA 8260B |
| 36 | Dichloromethane | 75092 | Calif. Toxics Rule | 4.7 | 0.5 | EPA 8260B |
| 33 | Ethylbenzene | 100414 | Taste & Odor | 29 | 0.5 | EPA 8260B |
| 88 | Hexachlorobenzene | 118741 | Calif. Toxics Rule | 0.00075 | 1 | EPA 8260B |
| 89 | Hexachlorobutadiene | 87683 | National Toxics Rule | 0.44 | 1 | EPA 8260B |
| 91 | Hexachloroethane | 67721 | National Toxics Rule | 1.9 | 1 | EPA 8260B |
| 94 | Naphthalene | 91203 | USEPA IRIS | 14 | 10 | EPA 8260B |
| 38 | Tetrachloroethene | 127184 | National Toxics Rule | 0.8 | 0.5 | EPA 8260B |
| 39 | Toluene | 108883 | Taste & Odor | 42 | 0.5 | EPA 8260B |
| 40 | trans-1,2-Dichloroethylene | 156605 | Primary MCL | 10 | 0.5 | EPA 8260B |
| 43 | Trichloroethene | 79016 | National Toxics Rule | 2.7 | 0.5 | EPA 8260B |
| 44 | Vinyl chloride | 75014 | Primary MCL | 0.5 | 0.5 | EPA 8260B |
| | Methyl-tert-butyl ether (MTBE) | 1634044 | Secondary MCL | 5 | 0.5 | EPA 8260B |
| | Trichlorofluoromethane | 75694 | Primary MCL | 150 | 5 | EPA 8260B |
| | 1,1,2-Trichloro-1,2,2-Trifluoroethane | 76131 | Primary MCL | 1200 | 10 | EPA 8260B |
| | Styrene | 100425 | Taste & Odor | 11 | 0.5 | EPA 8260B |
| | Xylenes | 1330207 | Taste & Odor | 17 | 0.5 | EPA 8260B |

| | | | | | | |
|---|---|---|---|---|---|---|
| **SEMI-VOLATILE ORGANICS** | | | | | | |
| 60 | 1,2-Benzanthracene | 56553 | Calif. Toxics Rule | 0.0044 | 5 | EPA 8270C |
| 85 | 1,2-Diphenylhydrazine | 122667 | National Toxics Rule | 0.04 | 1 | EPA 8270C |
| 45 | 2-Chlorophenol | 95578 | Taste and Odor | 0.1 | 2 | EPA 8270C |
| 46 | 2,4-Dichlorophenol | 120832 | Taste and Odor | 0.3 | 1 | EPA 8270C |
| 47 | 2,4-Dimethylphenol | 105679 | Calif. Toxics Rule | 540 | 2 | EPA 8270C |
| 49 | 2,4-Dinitrophenol | 51285 | National Toxics Rule | 70 | 5 | EPA 8270C |
| 82 | 2,4-Dinitrotoluene | 121142 | National Toxics Rule | 0.11 | 5 | EPA 8270C |
| 55 | 2,4,6-Trichlorophenol | 88062 | Taste and Odor | 2 | 10 | EPA 8270C |
| 83 | 2,6-Dinitrotoluene | 606202 | USEPA IRIS | 0.05 | 5 | EPA 8270C |
| 50 | 2-Nitrophenol | 25154557 | Aquatic Toxicity | 150 (5) | 10 | EPA 8270C |
| 71 | 2-Chloronaphthalene | 91587 | Aquatic Toxicity | 1600 (6) | 10 | EPA 8270C |
| 78 | 3,3'-Dichlorobenzidine | 91941 | National Toxics Rule | 0.04 | 5 | EPA 8270C |
| 62 | 3,4-Benzofluoranthene | 205992 | Calif. Toxics Rule | 0.0044 | 10 | EPA 8270C |
| 52 | 4-Chloro-3-methylphenol | 59507 | Aquatic Toxicity | 30 | 5 | EPA 8270C |
| 48 | 4,6-Dinitro-2-methylphenol | 534521 | National Toxics Rule | 13.4 | 10 | EPA 8270C |
| 51 | 4-Nitrophenol | 100027 | USEPA Health Advisory | 60 | 5 | EPA 8270C |
| 69 | 4-Bromophenyl phenyl ether | 101553 | Aquatic Toxicity | 122 | 10 | EPA 8270C |
| 72 | 4-Chlorophenyl phenyl ether | 7005723 | Aquatic Toxicity | 122 (3) | 5 | EPA 8270C |
| 56 | Acenaphthene | 83329 | Taste and Odor | 20 | 1 | EPA 8270C |
| 57 | Acenaphthylene | 208968 | No Criteria Available | | 10 | EPA 8270C |
| 58 | Anthracene | 120127 | Calif. Toxics Rule | 9,600 | 10 | EPA 8270C |
| 59 | Benzidine | 92875 | National Toxics Rule | 0.00012 | 5 | EPA 8270C |
| 61 | Benzo(a)pyrene (3,4-Benzopyrene) | 50328 | Calif. Toxics Rule | 0.0044 | 0.1 | EPA 8270C |
| 63 | Benzo(g,h,i)perylene | 191242 | No Criteria Available | | 5 | EPA 8270C |
| 64 | Benzo(k)fluoranthene | 207089 | Calif. Toxics Rule | 0.0044 | 2 | EPA 8270C |
| 65 | Bis(2-chloroethoxy) methane | 111911 | No Criteria Available | | 5 | EPA 8270C |
| 66 | Bis(2-chloroethyl) ether | 111444 | National Toxics Rule | 0.031 | 1 | EPA 8270C |
| 67 | Bis(2-chloroisopropyl) ether | 39638329 | Aquatic Toxicity | 122 (3) | 10 | EPA 8270C |
| 68 | Bis(2-ethylhexyl) phthalate | 117817 | National Toxics Rule | 1.8 | 3 | EPA 8270C |
| 70 | Butyl benzyl phthalate | 85687 | Aquatic Toxicity | 3 (7) | 10 | EPA 8270C |
| 73 | Chrysene | 218019 | Calif. Toxics Rule | 0.0044 | 5 | EPA 8270C |
| 81 | Di-n-butylphthalate | 84742 | Aquatic Toxicity | 3 (7) | 10 | EPA 8270C |
| 84 | Di-n-octylphthalate | 117840 | Aquatic Toxicity | 3 (7) | 10 | EPA 8270C |
| 74 | Dibenzo(a,h)-anthracene | 53703 | Calif. Toxics Rule | 0.0044 | 0.1 | EPA 8270C |
| 79 | Diethyl phthalate | 84662 | Aquatic Toxicity | 3 (7) | 2 | EPA 8270C |
| 80 | Dimethyl phthalate | 131113 | Aquatic Toxicity | 3 (7) | 2 | EPA 8270C |
| 86 | Fluoranthene | 206440 | Calif. Toxics Rule | 300 | 10 | EPA 8270C |
| 87 | Fluorene | 86737 | Calif. Toxics Rule | 1300 | 10 | EPA 8270C |
| 90 | Hexachlorocyclopentadiene | 77474 | Taste and Odor | 1 | 1 | EPA 8270C |
| 92 | Indeno(1,2,3-c,d)pyrene | 193395 | Calif. Toxics Rule | 0.0044 | 0.05 | EPA 8270C |
| 93 | Isophorone | 78591 | National Toxics Rule | 8.4 | 1 | EPA 8270C |
| 98 | N-Nitrosodiphenylamine | 86306 | National Toxics Rule | 5 | 1 | EPA 8270C |
| 96 | N-Nitrosodimethylamine | 62759 | National Toxics Rule | 0.00069 | 5 | EPA 8270C |
| 97 | N-Nitrosodi-n-propylamine | 621647 | Calif. Toxics Rule | 0.005 | 5 | EPA 8270C |
| 95 | Nitrobenzene | 98953 | National Toxics Rule | 17 | 10 | EPA 8270C |
| 53 | Pentachlorophenol | 87865 | Calif. Toxics Rule | 0.28 | 0.2 | EPA 8270C |
| 99 | Phenanthrene | 85018 | No Criteria Available | | 5 | EPA 8270C |
| 54 | Phenol | 108952 | Taste and Odor | 5 | 1 | EPA 8270C |
| 100 | Pyrene | 129000 | Calif. Toxics Rule | 960 | 10 | EPA 8270C |

| | | | | | | |
|---|---|---|---|---|---|---|
| **INORGANICS** | | | | | | |
| | Aluminum | 7429905 | Ambient Water Quality | 87 | 50 | EPA 6020/200.8 |
| 1 | Antimony | 7440360 | Primary MCL | 6 | 5 | EPA 6020/200.8 |
| 2 | Arsenic | 7440382 | Ambient Water Quality | 0.018 | 0.01 | EPA 1632 |
| 15 | Asbestos | 1332214 | National Toxics Rule/ Primary MCL | 7 MFL | 0.2 MFL >10um | EPA/600/R-93/116(PCM) |
| | Barium | 7440393 | Basin Plan Objective | 100 | 100 | EPA 6020/200.8 |
| 3 | Beryllium | 7440417 | Primary MCL | 4 | 1 | EPA 6020/200.8 |
| 4 | Cadmium | 7440439 | Public Health Goal | 0.07 | 0.25 | EPA 1638/200.8 |
| 5a | Chromium (total) | 7440473 | Primary MCL | 50 | 2 | EPA 6020/200.8 |
| 5b | Chromium (VI) | 18540299 | Public Health Goal | 0.2 | 0.5 | EPA 7199/ 1636 |
| 6 | Copper | 7440508 | National Toxics Rule | 4.1 (2) | 0.5 | EPA 6020/200.8 |
| 14 | Cyanide | 57125 | National Toxics Rule | 5.2 | 5 | EPA 9012A |
| | Fluoride | 7782414 | Public Health Goal | 1000 | 0.1 | EPA 300 |
| | Iron | 7439896 | Secondary MCL | 300 | 100 | EPA 6020/200.8 |
| 7 | Lead | 7439921 | Calif. Toxics Rule | 0.92 (2) | 0.5 | EPA 1638 |
| 8 | Mercury | 7439976 | TMDL Development | | 0.0002 (11) | EPA 1669/1631 |
| | Manganese | 7439965 | Secondary MCL/ Basin Plan Objective | 50 | 20 | EPA 6020/200.8 |
| 9 | Nickel | 7440020 | Calif. Toxics Rule | 24 (2) | 5 | EPA 6020/200.8 |
| 10 | Selenium | 7782492 | Calif. Toxics Rule | 5 (8) | 5 | EPA 6020/200.8 |
| 11 | Silver | 7440224 | Calif. Toxics Rule | 0.71 (2) | 1 | EPA 6020/200.8 |
| 12 | Thallium | 7440280 | National Toxics Rule | 1.7 | 1 | EPA 6020/200.8 |
| | Tributyltin | 688733 | Ambient Water Quality | 0.063 | 0.002 | EV-024/025 |
| 13 | Zinc | 7440666 | Calif. Toxics Rule/ Basin Plan Objective | 54/ 16 (2) | 10 | EPA 6020/200.8 |
| | | | | | | |
| **PESTICIDES - PCBs** | | | | | | |
| 110 | 4,4'-DDD | 72548 | Calif. Toxics Rule | 0.00083 | 0.02 | EPA 8081A |
| 109 | 4,4'-DDE | 72559 | Calif. Toxics Rule | 0.00059 | 0.01 | EPA 8081A |
| 108 | 4,4'-DDT | 50293 | Calif. Toxics Rule | 0.00059 | 0.01 | EPA 8081A |
| 112 | alpha-Endosulfan | 959988 | National Toxics Rule | 0.056 (9) | 0.02 | EPA 8081A |
| 103 | alpha-Hexachlorocyclohexane (BHC) | 319846 | Calif. Toxics Rule | 0.0039 | 0.01 | EPA 8081A |
| | Alachlor | 15972608 | Primary MCL | 2 | 1 | EPA 8081A |
| 102 | Aldrin | 309002 | Calif. Toxics Rule | 0.00013 | 0.005 | EPA 8081A |
| 113 | beta-Endosulfan | 33213659 | Calif. Toxics Rule | 0.056 (9) | 0.01 | EPA 8081A |
| 104 | beta-Hexachlorocyclohexane | 319857 | Calif. Toxics Rule | 0.014 | 0.005 | EPA 8081A |
| 107 | Chlordane | 57749 | Calif. Toxics Rule | 0.00057 | 0.1 | EPA 8081A |
| 106 | delta-Hexachlorocyclohexane | 319868 | No Criteria Available | | 0.005 | EPA 8081A |
| 111 | Dieldrin | 60571 | Calif. Toxics Rule | 0.00014 | 0.01 | EPA 8081A |
| 114 | Endosulfan sulfate | 1031078 | Ambient Water Quality | 0.056 | 0.05 | EPA 8081A |
| 115 | Endrin | 72208 | Calif. Toxics Rule | 0.036 | 0.01 | EPA 8081A |
| 116 | Endrin Aldehyde | 7421934 | Calif. Toxics Rule | 0.76 | 0.01 | EPA 8081A |
| 117 | Heptachlor | 76448 | Calif. Toxics Rule | 0.00021 | 0.01 | EPA 8081A |
| 118 | Heptachlor Epoxide | 1024573 | Calif. Toxics Rule | 0.0001 | 0.01 | EPA 8081A |
| 105 | Lindane (gamma-Hexachlorocyclohexane | 58899 | Calif. Toxics Rule | 0.019 | 0.019 | EPA 8081A |
| 119 | PCB-1016 | 12674112 | Calif. Toxics Rule | 0.00017 (10) | 0.5 | EPA 8082 |
| 120 | PCB-1221 | 11104282 | Calif. Toxics Rule | 0.00017 (10) | 0.5 | EPA 8082 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 121 | PCB-1232 | 11141165 | Calif. Toxics Rule | 0.00017 (10) | 0.5 | EPA 8082 |
| 122 | PCB-1242 | 53469219 | Calif. Toxics Rule | 0.00017 (10) | 0.5 | EPA 8082 |
| 123 | PCB-1248 | 12672296 | Calif. Toxics Rule | 0.00017 (10) | 0.5 | EPA 8082 |
| 124 | PCB-1254 | 11097691 | Calif. Toxics Rule | 0.00017 (10) | 0.5 | EPA 8082 |
| 125 | PCB-1260 | 11096825 | Calif. Toxics Rule | 0.00017 (10) | 0.5 | EPA 8082 |
| 126 | Toxaphene | 8001352 | Calif. Toxics Rule | 0.0002 | 0.5 | EPA 8081A |
| | Atrazine | 1912249 | Public Health Goal | 0.15 | 1 | EPA 8141A |
| | Bentazon | 25057890 | Primary MCL | 18 | 2 | EPA 643/ 515.2 |
| | Carbofuran | 1563662 | CDFG Hazard Assess. | 0.5 | 5 | EPA 8318 |
| | 2,4-D | 94757 | Primary MCL | 70 | 10 | EPA 8151A |
| | Dalapon | 75990 | Ambient Water Quality | 110 | 10 | EPA 8151A |
| | 1,2-Dibromo-3-chloropropane (DBCP) | 96128 | Public Health Goal | 0.0017 | 0.01 | EPA 8260B |
| | Di(2-ethylhexyl)adipate | 103231 | USEPA IRIS | 30 | 5 | EPA 8270C |
| | Dinoseb | 88857 | Primary MCL | 7 | 2 | EPA 8151A |
| | Diquat | 85007 | Ambient Water Quality | 0.5 | 4 | EPA 8340/ 549.1/HPLC |
| | Endothal | 145733 | Primary MCL | 100 | 45 | EPA 548.1 |
| | Ethylene Dibromide | 106934 | OEHHA Cancer Risk | 0.0097 | 0.02 | EPA 8260B/ 504 |
| | Glyphosate | 1071836 | Primary MCL | 700 | 25 | HPLC/ EPA 547 |
| | Methoxychlor | 72435 | Public Health Goal | 30 | 10 | EPA 8081A |
| | Molinate (Ordram) | 2212671 | CDFG Hazard Assess. | 13 | 2 | EPA 634 |
| | Oxamyl | 23135220 | Public Health Goal | 50 | 20 | EPA 8318/ 632 |
| | Picloram | 1918021 | Primary MCL | 500 | 1 | EPA 8151A |
| | Simazine (Princep) | 122349 | USEPA IRIS | 3.4 | 1 | EPA 8141A |
| | Thiobencarb | 28249776 | Basin Plan Objective/ Secondary MCL | 1 | 1 | HPLC/ EPA 639 |
| 16 | 2,3,7,8-TCDD (Dioxin) | 1746016 | Calif. Toxics Rule | 1.30E-08 | 5.00E-06 | EPA 8290 (HRGC) MS |
| | 2,4,5-TP (Silvex) | 93765 | Ambient Water Quality | 10 | 1 | EPA 8151A |
| | Diazinon | 333415 | CDFG Hazard Assess. | 0.05 | 0.25 | EPA 8141A/ GCMS |
| | Chlorpyrifos | 2921882 | CDFG Hazard Assess. | 0.014 | 1 | EPA 8141A/ GCMS |

| | | | | | | |
|---|---|---|---|---|---|---|
| **OTHER CONSTITUENTS** | | | | | | |
| | Ammonia (as N) | 7664417 | Ambient Water Quality | 1500 (4) | | EPA 350.1 |
| | Chloride | 16887006 | Agricultural Use | 106,000 | | EPA 300.0 |
| | Flow | | | 1 CFS | | |
| | Hardness (as $CaCO_3$) | | | 5000 | | EPA 130.2 |
| | Foaming Agents (MBAS) | | Secondary MCL | 500 | | SM5540C |
| | Nitrate (as N) | 14797558 | Primary MCL | 10,000 | 2,000 | EPA 300.0 |
| | Nitrite (as N) | 14797650 | Primary MCL | 1000 | 400 | EPA 300.0 |
| | pH | | Basin Plan Objective | 6.5-8.5 | 0.1 | EPA 150.1 |
| | Phosphorus, Total (as P) | 7723140 | USEPA IRIS | 0.14 | | EPA 365.3 |
| | Specific conductance (EC) | | Agricultural Use | 700 umhos/cm | | EPA 120.1 |
| | Sulfate | | Secondary MCL | 250,000 | 500 | EPA 300.0 |
| | Sulfide (as S) | | Taste and Odor | 0.029 | | EPA 376.2 |
| | Sulfite (as $SO_3$) | | No Criteria Available | | | SM4500-SO3 |
| | Temperature | | Basin Plan Objective | $^oF$ | | |
| | Total Disolved Solids (TDS) | | Agricultural Use | 450,000 | | EPA 160.1 |
| | | | | | | |

FOOTNOTES:

(1) - The Criterion Concentrations serve only as a point of reference for the selection of the appropriate analytical method. They do not indicate a regulatory decision that the cited concentration is either necessary or sufficient for full protection of beneficial uses. Available technology may require that effluent limits be set lower than these values.
(2) - Freshwater aquatic life criteria for metals are expressed as a function of total hardness (mg/L) in the water body. Values displayed correspond to a total hardness of 40 mg/L.
(3) - For haloethers
(4) - Freshwater aquatic life criteria for ammonia are expressed as a function of pH and temperature of the water body. Values displayed correspond to pH 8.0 and temperature of 22 C.
(5) - For nitrophenols.
(6) - For chlorinated naphthalenes.
(7) - For phthalate esters.
(8) - Basin Plan objective = 2 ug/L for Salt Slough and specific constructed channels in the Grassland watershed.
(9) - Criteria for sum of alpha- and beta- forms.
(10) - Criteria for sum of all PCBs.
(11) - Mercury monitoring shall utilize "ultra-clean" sampling and analytical methods. These methods include: Method 1669: Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels, US EPA; and Method 1631: Mercury in Water by Oxidation, Purge and Trap, and Cold Vapor Atomic Fluoresence, US EPA

# Attachment III -Dioxin and Furan Sampling

Section 3 of the State Implementation Plan requires that each NPDES discharger conduct sampling and analysis of dioxin and dibenzofuran congeners. The required number and frequency of sampling are as follows:

- Major NPDES Dischargers – once during dry weather and once during wet weather for each of three years, for a total of six samples.
- **Minor NPDES Dischargers** – once during dry weather and once during wet weather for one year during the three-year period, for a total of two samples.

Each sample shall be analyzed for the seventeen congeners listed in the table below. High Resolution GCMS Method 8290, or another method capable of individually quantifying the congeners to an equivalent detection level, shall be used for the analyses.

Sampling shall start during winter 2001/2002 and all analyses shall be completed and submitted by 1 November 2004. Sample results shall be submitted along with routine monitoring reports as soon as the laboratory results are available.

For each sample the discharger shall report:

- The measured or estimated concentration of each of the seventeen congeners
- The quantifiable limit of the test (as determined by procedures in Section 2.4.3, No. 5 of the SIP)
- The Method Detection Level (MDL) for the test
- The TCDD equivalent concentration for each analysis calculated by multiplying the concentration of each congener by the Toxicity Equivalency Factor (TEF) in the following table, and summing the resultant products to determine the equivalent toxicity of the sample expressed as 2,3,7,8-TCDD.

| Congener | TEF |
|---|---|
| 2,3,7,8TetraCDD | 1 |
| 1,2,3,7,8-PentaCDD | 1.0 |
| 1,2,3,4,7,8-HexaCDD | 0.1 |
| 1,2,3,6,7,8-HexaCDD | 0.1 |
| 1,2,3,7,8,9-HexaCDD | 0.1 |
| 1,2,3,4,6,7,8-HeptaCDD | 0.01 |
| OctaCDD | 0.0001 |
| 2,3,7,8-TetraCDF | 0.1 |
| 1,2,3,7,8-PentaCDF | 0.05 |
| 2,3,4,7,8-PentaCDF | 0.5 |
| 1,2,3,4,7,8-HexaCDF | 0.1 |
| 1,2,3,6,7,8-HexaCDF | 0.1 |
| 1,2,3,7,8,9-HexaCDF | 0.1 |
| 2,3,4,6,7,8-HexaCDF | 0.1 |
| 1,2,3,4,6,7,8-HeptaCDF | 0.01 |
| 1,2,3,4,7,8,9-HeptaCDF | 0.01 |
| OctaCDF | 0.0001 |

# Attachment IV – Reporting Requirements

1. **Laboratory Requirements**. The laboratory analyzing the monitoring samples shall be certified by the Department of Health Services in accordance with the provisions of Water Code Section 13176 and must include quality assurance/quality control data with their reports.

2. **Criterion Quantitation Limit (CQL)**. The criterion quantitation limits will be equal to or lower than the minimum levels (MLs) in Appendix 4 of the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (Copies of the SIP may be obtained from the State Water Resources Control Board, or downloaded from http://www.swrcb.ca.gov/iswp/final.pdf) or the detection limits for purposes of reporting (DLRs) published by the Department of Health Services (http://www.dhs.ca.gov/ps/ddwem/chemicals/DLR/dlrindex.htm) which is below the controlling water quality criterion concentrations summarized in attachment II of this letter.

3. **Method Detection Limit (MDL)**. The method detection limit for the laboratory shall be determined by the procedure found in 40 Code of Federal Regulations (CFR) Part 136, Appendix B (revised as of May 14, 1999).

4. **Reporting Limit (RL).** The reporting limit for the laboratory. This is the lowest quantifiable concentration that the laboratory can determine. Ideally, the RL should be equal to or lower than the CQL to meet the purposes of this monitoring.

5. **Reporting Protocols**. The results of analytical determinations for the presence of chemical constituents in a sample shall use the following reporting protocols:

   a. Sample results greater than or equal to the reported RL shall be reported as measured by the laboratory (i.e., the measured chemical concentration in the sample).
   b. Sample results less than the report RL, but greater than or equal to the laboratory's MDL, shall be reported as "Detected, but Not Quantified," or DNQ. The estimated chemical concentration of the sample shall also be reported.
   c. For the purposes of data collection, the laboratory shall write the estimated chemical concentration next to DNQ as well as the words "Estimated Concentration" (may be shortened to "Est. Conc."). The laboratory, if such information is available, may include numerical estimates of the data quantity for the reported result. Numerical estimates of data quality may be percent accuracy (± a percentage of the reported value), numerical ranges (low to high), or any other means considered appropriate by the laboratory.
   d. Sample results that are less than the laboratory's MDL shall be reported as "Not Detected" or ND.

6. **Data Format**. The monitoring report shall contain the following information for each pollutant:

   a. The name of the constituent.
   b. Sampling location.
   c. The date the sample was collected.
   d. The time the sample was collected.
   e. The date the sample was analyzed. For organic analyses, the extraction date will also be indicated to assure that hold times are not exceeded for prepared samples.
   f. The analytical method utilized.
   g. The measured or estimated concentration.
   h. The required Criterion Quantitation Limit (CQL).
   i. The laboratory's current Method Detection Limit (MDL), as determined by the procedure found in 40 CFR Part 136, Appendix B (revised as of May 14, 1999).
   j. The laboratory's lowest reporting limit (RL).
   k. Any additional comments.

6. **Example of Data Format**.

Discharger:_____ Name of Laboratory:_____
Contact Name:_____ Laboratory Contact:_____
Phone Number:_____ Phone Number:_____

| Name of Constituent and CTR # | Sampling Location* | Date Sample Collected | Time Sample Collected | Date Sample Analyzed | USEPA Method Used | Analytical Results (ug/L) | CQL (ug/L) | MDL (ug/L) | RL (ug/L) | Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| (See Attachment II) | | | | | | | | | | |
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**The effluent sampling station and the upstream receiving water station specified in the NPDES Permit Monitoring and Reporting Program should be used. Other sampling locations must be approved by Regional Board staff. Include longitude and latitude coordinates for the receiving water sampling stations.*